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117

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CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

AN ADDRESS on Science and War. Delivered at the University of Leeds Medical School on Oct. 1st, 1915, by Sir WILLIAM OSLER, Bart., M.D., F.R.S., Regius Professor of Medicine, Oxford 795

AN ADDRESS on War and the Medical Education of Women. Delivered at the London (Royal Free Hospital) School of Medicine for Women on Oct. 1st, 1915, by FLORENCE B. WILLEY, M.D., M.S. Lond., Assistant Physician, Diseases of Women, Royal Free Hospital, &c. 802

ORIGINAL ARTICLES.

Upon Spasmodic Symptoms in Rheumatism. By F. J. POYNTON, M.D. Lond., F.R.C.P.Lond., Physician to University College Hospital, London; Physician to Outpatients, the Hospital for Sick Children, Great Ormond-street 805

Amputation by Plane Circular Section. By G. A. WRIGHT, F.R.C.S. Eng., Lieutenant-Colonel, Royal Army Medical Corps; Emeritus Professor of Surgery, Victoria University of Manchester; Consulting Surgeon to the Manchester Royal Infirmary, &c. 810

The Radical Treatment of Septic Compound Fractures. By VERNON PENNELL, M.A., M.R.C.S., L.R.C.P. Lond., Fellow of Pembroke College, Cambridge; Temporary Lieutenant, Royal Army Medical Corps.—(*Illustrated*) 811

Intestinal Drainage in Septic Peritonitis. By ARTHUR J. NYULASY, L.R.C.P. Lond., M.R.C.S., Gynæcologist to the Perth Hospital, Australia 813

The Significance of Pulsus Alternans and Some Other Forms of Uneven Pulse. By A. E. CARVER, M.D.Cantab., M.R.C.P. Lond., Honorary Physician to Ockenden Convalescent Home and the Western Auxiliary Military Hospital, Torquay. — (*Illustrated*) 815

A Case of Complete Branchial Fistula in an Adult. By C. HAMILTON WHITEFORD, M.R.C.S., L.R.C.P., Specialist in Surgery, Military Hospital, Devonport 818

REVIEWS AND NOTICES OF BOOKS.

Oxford Primers on War Surgery. 1. Wounds in War: Their Treatment and Results. By Lieut.-Col. D'Arcy Power, R.A.M.C. (T.). 2. Injuries of Joints. By Major Robert Jones, R.A.M.C. (T.). 3. Abdominal Injuries. By Professor Rutherford Morison and Lieut.-Col. W. G. Richardson, R.A.M.C. (T.). 4. Surgery of the Head. By Major L. Bathe Rawling, R.A.M.C. (T.) 818

Views on Some Social Subjects. By Sir Dyce Duckworth, Bart., M.D., LL.D. 820

The Practical Medicine Series. Gynæcology Series, 1915. Edited by Emilius Dudley, A.M., M.D., and Herbert Stone, M.D. 820

Wound Infections and Some New Methods for the Study of the Various Factors which come into Consideration in their Treatment. By Colonel Sir Almroth E. Wright, M.D. Dub., F.R.S. 821

Alveolodental Pyorrhœa. By Charles C. Bass and Foster M. Johns 821

The Intervertebral Foramina in Man; the Morphology of the Intervertebral Foramina in Man, including a Description of their Contents and Adjacent Parts, with Special Reference to the Nervous Structures. By Harold Swanberg. With an Introductory Note by Professor Harris H. Santee 821

The Indian Journal of Medical Research. Vol. III. 821

LEADING ARTICLES.

THE HYGIENE OF ILLUMINATION 823

EDUCATION AND HEALTH 824

ANNOTATIONS.

Royal College of Surgeons of England: Museum Demonstrations 825

Stereoroentgenography of the Alimentary Tract 825

A Habitual Criminal 826

The Treatment of Measles by Serum 826

The Immediate Plating of Compound Fractures 826

Pyloroplasm in Infants 826

Rancid Butter 827

Gangrenous Epiploic Appendix Simulating Appendicitis 827

London Insurance Committee 827

Acute Pneumonia followed by Pneumothorax 828

Scarcity of Russian Medical Men 828

SPECIAL ARTICLES.

A Monthly Record of Atmospheric Pollution. — Committee for the Investigation of Atmospheric Pollution: Summary of Reports for Month ending May 31st, 1915 822

Ireland: Women and the Fellowship of the Royal College of Physicians of Ireland.—Insanity in Ireland.—Health of Belfast in 1914.—Ulster Volunteer Hospital.—The British, Russian, and Belgian Red Cross. — The late Mr. R. W. Stewart, L.R.C.P. & S. Edin., J.P., and the late Mr. John Stewart, L.R.C.P. & S. Edin. 829

Paris: Extraction of Intrapulmonary Projectiles. — Polyvalent Serum in the Treatment of Wounds. — Treatment of Wounds by Means of the Hot-air Douche 830

The Belgian Doctors' and Pharmacists' Relief Fund: The Week's Subscriptions.—The Appeal for Surgical Instruments 831

The Services: Royal Navy Medical Service. — Royal Army Medical Corps. — Indian Medical Service. — Special Reserve of Officers.—Territorial Force.—Territorial Force Reserve. — Deaths in the Services 831

VITAL STATISTICS:

Health of English Towns 832

Health of Scotch Towns 833

Health of Irish Towns 833

CORRESPONDENCE.

Evolutionary Etiological Factors in Disease (Dr. John Biernacki) 833

A "New Sign" in Pulmonary Diagnosis (Dr. Clive Riviere) 834

Cryogenine (Dr. Arthur T. Davies) 835

Three-ply Wood for Splints (Mr. E. Muirhead Little) 835

Treatment of Scorpion Stings (Colonel W. G. King, I.M.S., retd.) 835

The Functional Disorders of the Veins (Dr. Harry Campbell).. 836

Plumbism from Unusual Sources (Dr. Robert Cralk) ... 836

Breathing and Physical Exercises for Use in Cases of Wounds in the Pleura, Lung, and Diaphragm (Sir Alfred D. Fripp, K.C.V.O., C.B.) 836

Carbine and Carabin (Mr. J. Y. W. MacAlister) 844

A Peril of the Hedge and Field 844

Cartridge Shot in the Appendix 844

Curiosities and Defects of Sight 845

THE WAR.

The Casualty List 837

The Honours List 837

Deaths among the Sons of Medical Men 837

The Diagnosis of Typhoid and Paratyphoid Infections 837

War Emergency Committee 838

Vacancies for Medical Officers.. 838

Food in War Time 838

Concerts for Wounded Soldiers in Edinburgh 839

MEDICAL NEWS.

The Medical Officer of Health of Truro 801

Guy's Hospital Medical School 801

University of London: University College 813

Memorial to the late Mr. Edgar John Donbavand, L.R.C.P., M.R.C.S. 813

Royal College of Surgeons of England: Pass-list 839

Victoria University of Manchester: Pass-list 839

Royal Colleges of Physicians and Surgeons of Edinburgh and Royal Faculty of Physicians and Surgeons of Glasgow: Pass-list 839

University of Glasgow: Pass-list 839

Hunterian Society 840

Lord Mayor Treloar Cripples' Hospital and College, Alton, Hampshire 840

Donations and Bequests 840

Froebel Society 840

Edinburgh Royal Infirmary 840

Middlesex Hospital Medical School 840

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics: The Parliamentary Session.—Taxation of Imported Motor-cars 841

House of Commons: The Organisation of the Insurance Commission.—Spirit Duty in Hospitals. — Patent Medicines.—Hospital Ships Service at the Dardanelles. — The Case of Surgeon David Vickery.—Treatment of Nerve Shock in the Army.—Medical Inspection of Children under the Factory Acts. — Anti-typhoid Inoculation 841

Books, &c., received 842

Appointments 842

Vacancies 842

Births, Marriages, and Deaths.. 843

Notes, Short Comments, and Answers to Correspondents ... 843

Medical Diary 845

Meteorological Readings 845

Acknowledgment of Communications received 846

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

ARNOLD:— PAGE
Sibley ..... Treatment of Diseases of the Skin .. Cover 1

BAILLIERE, TINDALL & COX:—
Beggs ..... The Selection of the Recruit..... Cover 1
Bigg..... Indigestion 8
" ..... War Diseases (Typhus, Enteric, Dysentery, and Cholera)..... 8
Buchanan's Anatomy 7
Calot's Indispensable Orthopedics ..... Cover 1
Clark ..... Dispensary Treatment of Pulmonary Tuberculosis Cover 1
Freyer .... Enlargement of the Prostate 6
" .... Surgical Diseases of the Urinary Organs 6
Hayes ..... Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods Cover 1
Heath ..... Aural Suppuration: Its Arrest, with Preservation of the Hearing .... Cover 1
Rose & Carless' Surgery 7
Stewart's Physiology 7
Steddart .. The New Psychiatry Cover 1

CASSELL & CO.:—
Walker .... Surgical Diseases and Injuries of Genito-Urinary Organs Cover 1

CHURCHILL, J. & A.:—
Bennett .... Medical and Pharmaceutical Latin 5
Bowlby, Sir A. A., & Andrewes Surgical Pathology, &c. 5
Box ..... Post-Mortem Manual 5
Chavasse's Advice to a Mother .. 5
" Advice to a Wife 5

CHURCHILL—(Continued). PAGE
Coles ..... The Blood 5
" ..... Clinical Diagnostic Bacteriology 5
Corbin & Stewart's Physics and Chemistry 5
Craig ..... Psychological Medicine 5
Cushny .... Pharmacology and Therapeutics Cover 1
Eden ..... Manual of Midwifery Cover 1
Firth ..... Notter & Firth's Hygiene 5
Goodhart & Still's Diseases of Children 5
Hertzler .. Tumours 5
Hurry ..... Vicious Circles in Sociology and their Treatment .. Cover 1
Lee ..... The Microtomist's Vade-Mecum 5
Panton .... Clinical Pathology .. 5
Rowlands & Turner .. The Operations of Surgery .... Cover 1
Swayne .... Obstetric Aphorisms. 5
System of Treatment 5
Taylor .... Digestion and Metabolism 5
Thorne, Bezly .... Schott Methods of the Treatment of Chronic Diseases of the Heart 8
Turner & Stewart .. Text-Book of Nervous Diseases 5
Warren .... Surgery 5

FROWDE AND HODDER & STOUGHTON:—
McCann .. Cancer of the Womb: Its Symptoms, Diagnosis, Prognosis, & Treatment .. Cover 1
Waring .... Surgical Diseases of the Gall Bladder, Bile Ducts, & Liver 6
" .... Manual of Operative Surgery 6

GLAISHER:—
West ..... Granular Kidney and Physiological Albuminuria .... Cover 1

HEINEMANN:—
Llewellyn & Jones .... Fibrositis .... Cover 1

LEWIS & CO:—
Armstrong. I. K. Therapy, with Special Reference to Tuberculosis..... 23
Bennett .... Materia Medica and Pharmacy for Medical Students..... 26
Carter..... Elements of Practical Medicine..... 24
Einhorn.... Lectures on Dietetics 28
Millard .... Vaccination Question in the Light of Modern Experience 28
Oliver, Sir T. .... Lead Poisoning, from the Industrial, Medical, and Social Points of View 28
Paget ..... For and Against Experiments on Animals 28
Scott ..... The Road to a Healthy Old Age 23
Taylor..... Sanitary Inspector's Handbook 23
Thursfield & Branson .. Medical Morbid Anatomy and Pathology 26
Walsham & Orton .... X-Rays in the Diagnosis of Diseases of the Chest 23
White ..... Occupational Affections of the Skin .. 28

LONGMANS, GREEN & CO.:—
Watson-Williams. Rhinology: A Textbook of the Diseases of the Nose and Accessory Sinuses Cover 1

MACMILLAN & CO.:— PAGE
Tubby ..... Deformities, including Diseases of the Bones and Joints Cover 1

MEDICAL PUBLISHING CO.:—
Lane, Sir A. .... Operative Treatment of Fractures 6

MURBY & CO.:—
Olver ..... Our Teeth and Our Health 8

MURRAY:—
Brunton, Sir L. .... Therapeutics of the Circulation 6

SAUNDERS COMPANY:—
Anders & Boston .. Medical Diagnosis .. 3
DaCosta .. Modern Surgery 3
McKenzie .. Exercise in Education and Medicine .. 3
McKenzie on Exercise in Education and Medicine..... Cover 1

WRIGHT & SONS (BRISTOL):—
Groves .... Synopsis of Surgery Cover 1
Smith ..... Lateral Spinal Curvature and Flat Foot, and their Treatment by Exercises Cover 1

MEDICAL LIBRARIES, &c.:—
Behnke—
Stammering, Lisping, and Cleft-Palate Speech 8
Kelley—
Stammering..... 8
Lewis & Co.'s Medical & Scientific Circulating Library..... 6
Matthews—
Wood: Application of Trusses to Hernia 8
Schnelle—
Stammering.....

OFFICIAL AND GENERAL ANNOUNCEMENTS

APPOINTMENTS VACANT:—
Bethnal Green Infirmary..... 51
Bristol Royal Infirmary 50
Cambridgeshire Asylum, Fulbourn 50
City of Manchester 50
County Asylum, Dorchester 51
County Borough of Brighton..... 51
Dumfries and Galloway Royal Infirmary 52
Elder Dempster & Co., Liverpool.. 52
Great Yarmouth Hospital 50
Ipswich Mental Hospital..... 51
Laboratories of Pathology and Public Health 50
Leeds Public Dispensary 51
Lindsey (Lincolnshire) County Council 51
London Homœopathic Hospital .. 51
London Temperance Hospital 50
North Riding Infirmary, Middlesbrough 50
Paddington Green Children's Hospital 52
Parish of Hammersmith Infirmary 51
Putney Hospital 50
Queen's Hospital for Children, Bethnal Green 50
Reeth Union and Rural District Council 50
Royal Albert Edward Infirmary and Dispensary, Wigan..... 50
Royal Devon and Exeter Hospital 51
Royal Free Hospital, Gray's Inn-road 52
Royal Hospital for Diseases of the Chest, City-road..... 51
Royal Portsmouth Hospital 51
Royal South Hants and Southampton Hospital 51
Royal Sussex County Hospital, Brighton..... 52
Royal Victoria and West Hants Hospital, Bournemouth 52
Sheffield Royal Infirmary 51
Southampton Free Eye Hospital 51
Truro Auxiliary Naval Hospital 51
Warwickshire and Coventry Joint Committee for Tuberculosis 51

APPOINTMENTS—(Continued).
Welsh Metropolitan War Hospital, Whitchurch 52
West Bromwich and District Hospital 50
West Ham and Eastern General Hospital 50
West Riding Asylum, Menston, near Leeds 50
Wolverhampton and Staffordshire General Hospital 51
Worcester County and City Asylum, Powick 50
Worcester General Infirmary 50
Wrexham Infirmary 50

ASSISTANCIES, MEDICAL:—
Arnold & Sons, Giltspur-street.... 52
C., Finchley-road 52
Locum, S. Tottenham 52
No. 595, L.O., Strand 52
No. 596, L.O., Strand 52
No. 598, L.O., Strand 52
Turner, Adam-street 52

ASYLUMS, HOMES, &c.:—
Abbotswood House, Cinderford .. 47
Ashwood House, Kingswinford .. 44
Barnsley Hall, Bromsgrove 44
Barnwood House Hospital 45
Bishopstone House, Bedford..... 44
Brunton House, Lancaster 49
Buntingford House Retreat, Buntingford..... 47
Camberwell House, Peckham-road 48
Capel Lodge Retreat and Sanatorium, near Folkestone 47
Cheadle Royal..... 45
Clarence Lodge, Clapham Park .. 44
Colthurst House, Alderley Edge .. 49
Coppice, The, Nottingham 45
Court Hall, Kenton, near Exeter.. 44
Dalrymple House, Rickmansworth 46
Dartmoor Sanatorium 47
David Lewis Colony, Alderley Edge 49
Duff House, Banff..... 48
Edgar Allen Institute, Sheffield .. 49
"Emily Mangles" Convalescent Home, Farnham 49
G., Hampstead 50
Ghyllwoods 46
Grove House, Church Stretton.... 45
Grove, The, Catton, Norwich..... 45

ASYLUMS—(Continued).
Haydock Lodge, Newton-le-Willows 46
Heigham Hall, Norwich 45
Home for Epileptics, Maghull 49
Invernith Sanatorium, Colinsburgh 47
Littleton Hall, Brentwood 49
London Fever Hospital..... 45
Malling Place, Kent 45
Melbourne House, Leicester 47
Mendip Hills Sanatorium 46
Meyrick, Brighton 49
Middleton Hall, Co. Durham..... 44
Moat House, Tamworth 45
Newmains Retreat, Lanarkshire.. 47
Nordrach-on-Dee, Banchory 48
Northumberland House, Finsbury Park 44
Northwoods House, Winterbourne 44
No. 381, L.O., Strand 49
No. 412, L.O., Strand 49
No. 578, L.O., Strand 50
Peckham House..... 48
Pendyffryn Hall Sanatorium, Nordrach-in-Wales 48
Plymptom House, Plympton 45
Portsmouth Corporation Mental Hospital 44
Ravenscroft House, Golders Green 50
St. Andrew's Hospital, Dollis Hill 49
St. Andrew's Hospital, Northampton 45
St. Luke's Hospital for Mental Diseases 44
St. Raphaels, Buxted, Sussex 48
Shaftesbury House, Formby-by-the-Sea..... 48
Springfield House Private Asylum, Bedford 44
Stretton House, Church Stretton.. 45
The General Manager, Cravenstreet 49
The Grange, near Rotherham 45
Vale of Clwyd Sanatorium 47
Warneford Asylum, Oxford..... 44
Wye House, Buxton 45

HEALTH RESORTS, BATHS, &c.:—
Davos 49
Droitwich Brine Baths 48
Smedley's, Matlock 48

LIFE & FIRE ASSURANCES, &c.:—
Medical, Sickness and Accident Society..... 27
Prudential..... 42

MASSAGE:—
Associated Male Nurses and Masseurs 42
London School of Massage 44

MEDICAL ACCOUNTANTS, &c.:—
Turner 53

MEDICAL AGENTS:—
Fieldhall, Limited 54
Manchester Clerical, &c., Association 53
Medical Agency 54
Moore & Co. 52
Needes, Herbert 54
Needes, J. C. 54
Peacock & Hadley..... 54
Scholastic, Clerical, &c., Association 54
Turner 54

MEDICAL SCHOOLS:—
(LONDON.)
London School of Clinical Medicine 41
West London Post-Graduate College 41

NURSING INSTITUTES:—
Co-operation of Temperance Male and Female Nurses 43
General Nursing Association..... 42
Hospital for Sick Children, Great Ormond-street 44
London Nurses' Association 43
London Temperance Male and Female Nurses Co-operation .. 43
Male Nurses Temperance Co-operation 42
Mental Nurses Association 42
Mental Nurses' Co-operation..... 44
New Mental Nurses' Co-operation..... 42
Nurses' Co-operation, Portland-place 42

For continuation of Index to Official and General Announcements, and Trade and Miscellaneous Advertisements, see page 4.

An Address
ON
SCIENCE AND WAR.

Delivered at the University of Leeds Medical School on Oct. 1st, 1915,

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LADIES AND GENTLEMEN,—For more than a year tongue and pen have served as safety-valves for the seething emotions of our hearts and heads. The time to keep silence is at hand when all shall be too busy to speak or to write. This was the feeling in my mind when your kind invitation came, but I yielded, interested in your school and its old associations, and, moreover, I had many warm friends here, particularly that Mosaic veteran, our distinguished colleague T. Pridgin Teale. The race is in one of its periodic attacks of acute mania, a bad one, too; Jeremiah of old would say the world is drunken and the nations are mad. So respectable and self-respecting had we become that the bout is a great shock. To discuss the causes would be out of place, but as the effects of the malady concern us directly I propose to speak briefly of the influence of the new dispensation of science on the old practice of war. Let me clear the ground with a few preliminary remarks.

WAR AND HISTORY.

"Omnes homines ex naturâ hostes" is an old saying, and it was the reluctant admission of Plato that the world was foolish "in not understanding that all men are always at war with one another."

Montaigne qualifies the statement that war is "the greatest and most magnificent of human actions" with the remark that "this science of undoing and killing one another and of ruining and destroying our own kind has nothing in it so tempting as to make it coveted by the beasts," and at the best it is but a testimony of our weakness and imperfection. In a memorable passage he gives a true estimate "how this great body with so many fronts, and so many motions, which seems to threaten heaven and earth—

> Not thicker billows beat the Lybian main,
> When pale Orion sets in wintry rain;
> Nor thicker harvests on rich Hermus rise,
> Or Lycian fields, when Phœbus burns the skies,
> Than stand these troops; their bucklers ring around;
> Their trampling turns the turf, and shakes the solid ground—
> (*Æneid* VII.)

this furious monster with so many heads and arms is yet man—feeble, calamitous and miserable man. "'Tis but an ant hill disturbed and provoked." What would the great essayist have thought had he known what ultra-microscopic Lilliputians we really are, dwelling on a mustard seed in the great universe.

Every page of history is red with blood. The primary object of war is to kill or to maim so as to put out of action as many as possible on either side. Read Walter Bagehot's chapter, The Use of Conflict, in "Physics and Politics" if you wish to get at the essence of matter: "The savage virtues which tend to war are the daily bread of human nature." And he quotes Carlyle: "The ultimate question between every two human beings is, Can I kill thee or canst thou kill me?"

Our young minds are trained to regard warfare as one of the prerogatives of Jehovah, the Lord of Hosts, who "teachest my hands to war and my fingers to fight." With man's conception of a great war in Heaven has passed into current belief one of the strongest of popular dogmas—that of a personal devil. Nurtured on the Old Testament, I recall as a child my terror at the recital of the slaughter of the thousands by the Israelites, when they spared neither man nor beast, woman nor child. After the ears of my understanding were opened it was but small comfort to know that these countless thousands existed only in the imagination of the historian of petty tribes of Palestine. The pride, pomp, and circumstance of war have so captivated the human mind that its horrors are deliberately minimised. The soldier embodies the heroic virtues, and the camp is the nursery of fortitude and chivalry. The inspiration of the nation is its battles. Crecy and Agincourt, Trafalgar and Waterloo, are more notable events in history than Magna Charta, the execution of King Charles, or the Declaration of American Independence.

Mankind in the Childhood of Civilisation.

The explanation of this distressing fact is that we are still in the childhood of civilisation. Some millions of years divide the Tertiary period, when man broke away from the great ape stock, and the dawn of our modern era, when "iron, cold iron," became master of the world. Only with the working of metals did progress become possible. In Time our civilisation is but a thin fringe like the layer of living polyps on the coral reef, capping the dead generations on which it rests. The lust of war is still in the blood, we cannot help it. There was, and there is as yet, no final appeal but to the ordeal of battle. Only let us get the race in its true perspective in which a thousand years are but as yesterday, and in which we are contemporaries of the Babylonians and Egyptians and all together within Plato's year. Let us remember, too, that war is a human development, unknown to other animals. Though Nature is ruthless "in tooth and claw," collective war between members of the same species is not one of her weapons; and in this sense Hobbes's dictum that "war was a state of nature" is not true. The dinosaurs and pterodactyls and the mastodons did not perish in a struggle for existence against members of their own species, but were losers in a battle against conditions of nature which others found possible to overcome. In our own day the gradual disappearance of native populations is due as much to whisky and disease as to powder and shot, as witness in illustration of the one the North American Indian and of the other the Tasmanians.

The Dream that Wars would Cease.

And yet in what a fool's paradise many of us have been living, flaunting in the face of history our wish for peace—seeking it, ensuing it, with the war drums throbbing in our ears. But let us respect this pious wish since it was not without basis.

For more than a century the world had been doing well—everywhere prosperity and progress. The French Revolution and the founding of the American Republic seemed to lift humanity to a level on which might be realised practically the brotherhood of man. There had been bloody and grievous wars in the nineteenth century, but there were such hopeful features that the new century

opened with peace congresses and peace palaces. Remarkable and unheard of incidents seemed to indicate a change of heart among the nations. Following the Spanish-American War, Cuba, the Pearl of the Antilles, fell to the United States by conquest, only to be restored to its rightful owners. The Philippine Islands remain in trust by the same nation to have and to hold for its inhabitants whenever they are ready. South Africa, conquered at the cost of much blood and money, was made a nation by its conquerors. There were other considerations; commerce knew no boundaries, and commerce was the uncrowned king to whom all paid homage. An intellectual comity had sprung up between the nations, fostered by a growing interchange of literature and maintained by gatherings whose Pentecostal character lent hope to the dream of Isaiah of a day when in the spirit of wisdom and understanding Ephraim should not vex Judah and Judah should not vex Ephraim.

And some of us had indulged the fond hope that in the power man had gained over nature had arisen possibilities for intellectual and social development such as to control collectively his morals and emotions, so that the nations would not learn war any more. We were foolish enough to think that where Christianity had failed Science might succeed, forgetting that the hopelessness of the failure of the Gospel lay not in the message, but in its interpretation. The promised peace was for the individual—the world was to have tribulations; and Christ expressly said: "Think not that I am come to send peace on earth, I came not to send peace but a sword." The Abou ben Adhems woke daily from their deep dreams of peace, and lectured and published pamphlets and held congresses, while Krupp built 17-inch howitzers and the gun range of the super-Dreadnoughts increased to eighteen miles!

And we had become so polite and civil, so cultured in both senses of that horrid word, with an "Is thy servant a dog?" attitude of mind in which we overlooked the fact that beneath a skin-deep civilisation were the same old elemental passions ready to burst forth.

The Athenians and Melos.

Professor Haverfield shocked me the other day by remarking that the Greeks, with all their refinement, were a match for the worst of us to-day. This drove me to Thucydides, where I found a parallel with Belgium in the treatment of Melos by the Athenians. He gives the wonderful dialogue in a cold, clear style befitting the hard barbarity of the transaction. The delegates from Athens urged: "What is right is estimated by the equality of power to compel." "The powerful exact what they can, the weak grant what they must." The Melians wished to remain quiet and to be friends, and to force them to take sides they said would only make enemies of all the neutrals—and then there were the gods! To which the Athenians replied: "As regards the favour of heaven, we trust that we, too, shall not fall short of it: they always maintain dominion wherever they are the stronger." It was the case of the Walrus and the Carpenter, and the Athenian delegates retired with the remark: "We bless your simplicity; we do not admire your folly." And Book V. concludes in a twentieth century "might is right" fashion: "They surrendered at discretion to the Athenians who put to death all the male adults, they took and made slaves of the women and children ..... as for the country they inhabited it themselves."

In spite of unspeakable horrors war has been one of the master forces in the evolution of a race of beings that has taken several millions of years to reach its present position. During a brief fragment of this time—10,000 or more years—certain communities have become civilised, as we say, without, however, losing the savage instincts ground into the very fibre of their being by long ages of conflict. Suddenly, within a few generations, man finds himself master of the forces of nature. In the fulness of time a new dispensation has come into the world. Let us see in what way it has influenced his oldest, and most attractive occupation.

THE INFLUENCE OF SCIENCE.

Science is a way of looking at the world taught us by the Greeks—a study of nature with a view to utilising her forces in the service of man. It "arose from the simplest facts of common experience, and grew by the coöperation of the mass of men with human intellect at its highest. And when developed it returns again to strengthen the common intelligence and increase the common good. Above all, more perfectly than any other form of thought, it embodies the union of past and present in a conscious and active force."[1] Man's latest acquisition, it has worked a revolution in every aspect of his life, without so far changing in any way his nature. He is still a bit bewildered, and not quite certain whether or not he has invented a Frankenstein. That is a splendid allegory of Kipling's—"The Four Angels" of the four elements, who offered themselves in vain to Adam while in Paradise; but—

> As Adam was a-working outside of Eden-Wall,
> He used the Earth, he used the Seas, he used the
> And out of black disaster [Air and all;
> He arose to be the Master
> Of Earth and Water, Air and Fire.

The promise of Eden of full dominion over nature has only been fulfilled in our day. The flower and fruitage has come suddenly within a couple of generations. Even the seed time was but a few years ago, for to the Heidelberg man, looking down the ages from the Glacial period, Aristotle and Darwin are contemporaries, Galen and Lister fellow practitioners. Steam and electricity have upset our week-day relations, and the theory of evolution our Sundays. Like a beggar suddenly enriched man has not yet found himself; and the old ways and old conditions often sort ill with the changing times. New bottles could not always be found for the new wine.

Scientific Progress.

Organised knowledge, science, if living, must infiltrate every activity of human life. There was a difficulty in these islands, which of fruitful ideas, inventions, and discoveries have had the lion's share, but failed to grasp quickly their practical importance. The leaders of intellectual and political thought were not awake when the dawn appeared. The oligarchy who ruled politically were ignorant, the hierarchy who ruled intellectually were hostile. Read of the struggles at Oxford and Cambridge in the "fifties" and "sixties" of the last century to get an idea of the attitude of the intellectual leaders of the country towards "Stinks," the generic term for science. It was not port and prejudice, as in Gibbon's day, but just the pure hostility of a mediæval ignorance. Those in control of education were more concerned with the issues of

[1] Marvin: The Living Past, second edition, 1915.

Tract 90 and the Colenso case than the conservation of energy, and "The Origin of Species." To take but one example. What a change it might have wrought in rural England if, in 1840, when the distinguished Professor Daubeny was made professor of rural economy, Oxford could have had great State endowment for an Agricultural College.

The seed was abundant and the soil was good and only needed the cultivation that has been given so freely by members of the past generation, with what results we see to-day at Oxford and Cambridge and in the new universities. In Scotland, too, science had a hard fight to break the shackles of ecclesiasticism. It seems scarcely credible that religious tests for professors of the physical sciences were demanded until the "sixties." I have a pathetic letter, 1852, to the Secretary of State for the Home Department from the late George Wilson, who wished to be a candidate for the chair of chemistry in Glasgow, but was debarred, not being a member of the Church of Scotland! No wonder science could not pass from the top through such Berkefeld filters.

But all this has changed, and everywhere an enviable academic freedom now exists. The problem of linking university work with the scientific industries is being solved by you here and elsewhere, as in Sheffield, with marked success, and is part of a great and growing movement to which the war has given a fresh stimulus. May I call the attention of those interested to a recent pamphlet, No. 30, of the Board of Education, by Thomas Lloyd Humberstone, entitled "An Experiment on Educational Research," as it illustrates the type of work to which I refer. In the words of the foundation (which is connected with the University of Pittsburg) the object is: "The increase of useful knowledge through the application of contemporary science to industrial processes ..... and providing the opportunities for the training of men for high industrial appointments." It is worthy of careful study. In 40 years Germany made science infiltrate every activity of her life, and much good, you may say, has it done her. Well, if in this day of trial she can be independent of the importation of nitrates by the synthetic manufacture of nitric acid it will pay her a thousandfold the millions she has spent in promoting the interdependence of science and commercial technology.

SCIENTIFIC METHODS OF DESTRUCTION.

In two ways science is the best friend war has ever had; it has made slaughter possible on a scale never dreamt of before, and it has enormously increased man's capacity to maim and to disable his fellow man. In exploiting the peaceful victories of Minerva, Mars has added new glories to his name. More men are killed, more men are wounded, and consequently more men are needed than ever before in the history of the world's wars. From 1790 to 1913 there were 18,552,200 men engaged in the great wars, of whom 5,498,097 lost their lives (D. E. Smith). In the Balkan wars of 1912–1913 there were 1,230,000 men engaged, of whom 350,000 were killed. In the Russo-Japanese War there were 2,500,000 men, of whom 555,900 lost their lives (D. E. Smith). It is estimated that in the present war more than 21 millions are engaged! As weapons have improved the losses will be yet greater, and we may expect that at least five or six millions of men in the prime of life will be killed. Within a few years artillery and high explosives, submarines and air-craft have so revolutionised our methods of warfare that thousands are now destroyed instead of hundreds. The rifle and the bayonet seem antiquated, and one may go from hospital to hospital and not see a wound from the latter, and comparatively few from the former.

The Submarine.

In three directions science has scored in a mission of destruction. What a marvellous adaptation of physics, pneumatics, and mechanics is displayed in a submarine, with which the highest standard of wholesale destruction is reached. In a few seconds a vast battleship, itself a product in every part of scientific genius, is blown asunder and a thousand men and boys sent flying into eternity. Or a colossal liner like the *Lusitania*, laden with harmless non-combatants, is torpedoed without warning and above 1200 perish miserably, to the inexpressible delight of a Kultured nation, whose school children celebrated the event with a holiday.[2] How Mars and Neptune must chuckle at the truly Olympian scale on which we do these things to-day.

The Modern Battleship.

And the new guns and modern explosives! Chemistry, electricity, physics, optics, mathematics, every aspect of the subtlest human study has contributed to their perfection. What a divinely adapted organism of destruction is a modern battleship! And the gusto with which we receive news of a naval triumph is only equalled by the keenness of the delight with which the spectacle is witnessed. Listen to these newspaper extracts:

> After the action, to see our innocent-looking ships leave the spot where the German ships sank was a sight for the Gods. ..... It was a fine sight to see the *Lion* demolish one cruiser. ..... For fully ten minutes she belted away without getting a single hit. Then the *Lion*, which was leading the line, hoisted "Open fire," turned slowly and majestically round and fired her broadsides—once. It was quite sufficient. Up went a cloud of smoke and steam from "the target," and when it cleared off her aft funnel was at a rakish angle and a huge rent appeared the length of her side. ..... So once again the *Lion* turned, and this time fired but five shots from her huge turrets. Amidst a shower of splinters, smoke and fire, the German disappeared. We steamed over the spot where she sank but ..... not a single living thing was to be seen.

Dante and Milton in their descriptions of hell are quite outclassed by the description of what happens on a battleship in action outclassed by an enemy's guns. Here is perhaps the greatest single victory for science in war, from one standpoint. In the making of a 15-inch gun that will throw with accuracy a ton of metal a dozen or more miles is found a combination of brains and machinery such as does not exist in any other human product, and, let us add, such a combination of brains and courage does not exist in the working of any other machine. And to us the courage seems to hallow the shambles!

This is the day of Nisroch, Chief of Ordnance to Satan in the great war of heaven, inventor of—

> Hollow engines long and round.
> * * * * *
> Such implements of mischief as shall dash
> To pieces and o'erwhelm whatever stands
> Adverse, that they shall fear we have disarmed
> The Thunderer of his only dreaded bolt.
> (*Paradise Lost*, Book VI.)

The Enormous Power of Present-day Artillery.

On land the field-guns, howitzers, and machine-guns have increased enormously our killing capacity;

[2] Owen Wister: The Pentecost of Calamity, p. 55.

so much so, indeed, that in self-defence the armies have taken to earth, and from the North Sea to the Alps Europe has become a rabbit warren. High explosives, long-range accuracy, and quickness of fire have made the artillery arm the most effective of the Service. Every device of science has been pressed into use, and the aeroplane with observers and cameras have plotted the entrenched lines to checker boards, on to any square of which a rain of shell and shrapnel may be poured. The high-explosive shells, the "Jack Johnsons," and the "Black Marias" have played a great rôle in the present war, and not only kill and maim, but the shell-shock from commotion puts a large number of men out of action. Against the great Krupp howitzers the forts of Europe have gone down like cardboard houses.

Artillery combined with quick-firing machine-guns follow hard upon the torpedo as agencies of destruction. Against an oncoming enemy 20 per cent. of men and 60 to 80 per cent. of horses are hit by separate bullets within the "mown area." There was a good description the other day of the carnage at Novo Georgievsk among men advancing in close formation. A tract of land four miles long and one and a quarter miles broad was literally covered by thick layers of the dead, heaps upon heaps, with hundreds of men standing upright, stiffened in death among the prone corpses. A super-Dreadnought could not do more.

But there are worse things than killing. At sea it is a short shrift—there are not many sailors in hospitals; but on land the shrapnel, shell, and hand grenade fill the wards with maimed and mutilated. A rifle bullet nowadays goes through a man, kills if it hits a vital spot, but very often leaves a nice clean wound which heals promptly, though head, chest, or abdomen may have been perforated. The shrapnel and the hand grenade tear, bruise, and break, lacerating flesh and joints, blowing away limbs or parts of the face or head, causing wounds not only terrible in themselves but certain to become infected with clothing and earth. Even the bones of a man's comrade have been blown into him. Never since the primal tragedy, when man first shed man's blood, has there been such a carnival of carnage as that which science has made possible during the past year. And add the dumb and deaf, the paralysed, and the insane from shell explosions and shock!

Irrespirable Gas.

But there is worse to follow—the climax of the adaptation of modern knowledge to war. I had a dream not long since that explorers in Central Africa had accidentally opened a vein of deadly radium which flowed slowly but imperceptibly like an unseen lava over the surface of the earth, killing by the exhalation of an irrespirable gas. It had crossed beneath the Mediterranean, swept through Europe, and had reached England. Convocation had been summoned by the Chancellor and the members of the University in full academics awaited the end of all things. On came the irresistible and deadly vapour, swept down the ranks, reached me, and I awoke—gasping for breath.

Theoretically all is fair in war, but by common consent certain practices regarded as cruel are tabooed, such as the use of explosive bullets. Not so in the present war. Never before has anything been used by man to kill his fellow man equalled in diabolical capacity for cruelty the use by the Germans of irrespirable gas. Had it been a suddenly asphyxiating vapour, such as may have been the breath of the angel of death as he passed over the host of Sennacherib, the action would not perhaps have been thought any more reproachful (in war) than wholesale drowning by the torpedo. But this was a very different matter—agonising suffocation to those who could not escape; many for days gasped out their lives in a slow process of strangulation, others had a lingering illness with urgent dyspnœa, cough, and inflammation of the lungs. The worst types of cases were, I am told, appalling to witness—some who reached England were bad enough.

Air-craft.

It is not a little remarkable that the aspect of the war which caught the popular fancy and from which so much was expected has proved comparatively harmless from a killing standpoint. "The rain of ghastly dew" of Tennyson's vision, which the Wright brothers and Zeppelin have made possible, is more destructive of property than of life. But the mastery of the air is one of the greatest of the conquests of science. How Leonardo da Vinci would have rejoiced, in this day predicted so confidently by him, to see flocks of wonderful bird-men as much at home in the air as eagles. The development of air-craft and air-guns has added a new arm to the Service, but battles of the airy navies grappling with each other or attacked by shells from land leave few wounded, and the total killed so far is small. An enormous value for observation and the shock of righteous indignation roused all over the world by the Zeppelin murders of women and children have been, so far, the chief assets of the air.

The bombarding of air-craft is a wonderful sight. Motoring near —— the other day, one of my companions, Colonel McCrae, called out, "Look up; there they begin." His practised ear had caught the sound of an air-craft gun. Far up against a white cloud was a round puff-ball of black smoke, looking the size of the moon, and just beyond it a black speck moving swiftly by the edge of the cloud. Then near to it a spit of fire of an exploding shell, and another puff-ball of smoke. Flash followed flash, and within five minutes we counted 42 black balls of smoke, silhouetted against a big cloud which resembled a huge slice of "spotted-dog" bread. The shells seemed to explode all about the aeroplane and the gunners had the range, but it was impossible to say how close the shots came; evidently the aviator found the place too hot, as he disappeared into the cloud. Half an hour later we saw a still more exciting contest. The bird-man was evidently taking observations and moving in different directions. Many volleys were discharged at him and the whole sky in the neighbourhood was spotted with shrapnel puffs, among which the aeroplane moved in and out quite unconcernedly—so it appeared. On either side of the road were peasants working in the fields and close by a steam thrashing machine with its staff, but no one stopped work or even looked up at a scene that custom had made stale.

SCIENCE AS A BENEFICENT FORCE.

Enough of this. Let us turn to the other side of the picture; let us see what science has done in a mission of salvation amid the horrors of war. Three things, first, in organising the transport and care of the sick and wounded,

Care of the Wounded in Napoleon's Time and To-day.

In no work do we get such a picture of the grim details of war as in the "Mémoires" of the famous Baron Larrey, Napoleon's favourite surgeon (Paris, 1813). The retreat across the desert from Syria and the retreat from Moscow mark the most terrible sufferings ever experienced by armies. Larrey was not only a great surgeon, but a lover of the soldier and devoted to his comfort. From his campaign on the Rhine, in 1789, we may date the beginning of the modern rapid transport of the wounded from the firing line. Previously the custom was to collect the wounded as soon as possible after the combat, which meant that they were often 24 or 36 hours on the field without assistance. Let me give his own words, as they are memorable: "La prise de spire nous en ayant donné un assez grand nombre, j'eus la douleur d'en voir mourir plusiers, victims de cet inconvénient; ce qui me donna l'idée d'établir une nouvelle ambulance qui fût en état de poster de prompts secours sur le champ de bataille même."[3] This was the origin of the famous *ambulance volante*, from which have evolved our modern methods of rapid transport. What would Larrey think of the flying ambulance of to-day—motor and train? One thing could not but please him—the development of the ambulance corps on lines laid down by him and the big motor ambulance modelled on his *grandes voitures* with four horses which held four wounded recumbent.[4]

Through the bitter experiences of the Napoleonic wars, of the Crimea, of the American Civil War, and more particularly of the recent campaigns, there has been evolved a wonderful machinery, replete with science, for the transport and care of the sick and wounded. There must be suffering—that is war—but let us be thankful for its reduction to a minimum, through the application in every direction of mechanical and other pain-saving devices. We all know the work at the big base hospitals at home, and let us not forget the deep debt of gratitude due to Lord Haldane and Sir Alfred Keogh for perfecting their organisation years before the war broke out. I wish the public could know more of the heroism and devotion of the men and women serving the field ambulances and casualty clearing stations, the perfect service rendered, the duties done in loyal and loving charity. Let us see what happens to the poor fellows on their way to a base hospital in France.

A Hospital Camp.

Come with me "somewhere in France," to the top of a high down overlooking the sea. At our feet lies a city of tents, spread out for miles between the dunes and the downs, white and spotless against the evening sun. Lines are seen dividing sections of the encampment, and the scene reminds one of the description of the tents of Israel pitched in Moab and putting Balaam and Belak to sore perplexity. Figures in white and in khaki flit about, and now and again a motor lorry passes up the main line, but it is a peaceful scene on a summer's eve—in Picardy.

The camp is one of several big groups of British general and stationary hospitals. This one is made up of Durbar tents, in five or six separate units of from 800–1000 beds each. It was a novel experience, as I had never seen so many men under canvas, and the hospital wards were in big tents holding usually from 20 to 30 patients. The inner lining of the tent was of a coloured Cawnpore material with attractive patterns. More beautiful wards cannot be imagined, so rich and varied in colouring, but I hasten to add that I did not see them in wind or rain. And to the call of country and humanity are men and women from all parts of the English-speaking world—seasoned old veterans of the Army Medical Corps, consultants from London and Edinburgh, specialists of distinction, general practitioners, men from Australia and Canada looking after their special hospitals, with units of our brothers from Harvard University and from Chicago. Some of these groups, as that from McGill University, Montreal, have brought over a complete staff, with nurses and orderlies and all the necessary apparatus for a 1040 bed hospital. Other Canadian University units have come from Toronto, Kingston, Laval, and Dalhousie. At home the members of these staffs are busy teachers and practitioners. The nurses have come from all parts of the Empire, and two groups from the United States—ministering angels all to the sick and wounded. Nothing could illustrate better the spirit of self-sacrifice and devotion which the great war has awakened all over the world.

Reception of a Convoy of Wounded.

But a message has come to the camp—"A convoy to-night!"—and word is sent to the wards to prepare beds for a fixed number. Promptly at the hour stated a magnificent ambulance train pulls up at the station near by—15 big steel hospital carriages of the latest construction, presented by the United Millers' Association of Great Britain. Twenty-eight motor ambulances are in attendance from the various hospitals, and the work of unloading begins. A more orderly, well-arranged business it is not possible to imagine. The cot cases are first lifted on their stretchers from the car and put in the ambulance—four in each, taking, as I timed it, a minute each. And all done so quietly, no talking, no fuss.

I went in the ambulance with the group I had seen lifted out. Let us follow them to their beds. First, an Irishman with a bullet wound in the scalp. "Begorra," said he, "I did not duck in time, but me mate's in Paradise to-day—a Saxon got him in the ear"; a Londoner with typhoid fever; a Lancashire lad with appendicitis; and a Cheshire man with a bad shrapnel wound in the leg. By the way, all were smoking! They had been about six hours in the train, very comfortable and well fed; the wounded had been hit early in the morning. They reported that the only serious discomfort was getting to the dressing station. It took seven minutes in the ambulance to the hospital. The patients passed quickly through the admitting tent, where their tallies were copied and the ward assigned. The four were in bed and the two wounded had had their dressings changed, and all had had hot *bouillon*, in just 27 minutes from the time the first was lifted out of the ambulance train.

I mention these details as they illustrate one aspect of science in organisation. And it is nice to know that in all departments relating to the transfer of the sick and wounded both by sea and land, the arrangements have been as satisfactory as the exigencies of war have permitted.

[3] Mémoires, Tome I., 58.
[4] Ibid., p. 150.

Progress of the Cases.

I followed the four the next day. The Irishman's wound in the head only needed scouring and a few stitches; another inch lower and he would have joined his mate. The shrapnel leg was serious, torn flesh, broken bones, clothing and dirt in the wounds. He had been carefully dressed and was comfortable, but with a slight rise of temperature. An X ray picture was taken to locate the pieces of shrapnel and the site of the fractures. In an operating room as well equipped as in London the foreign bodies were removed, the bones placed in apposition, and the limb dressed. I saw him two days later, and though there was slight fever he was comfortable, the wounds healthy, and the outlook for his leg good.

The appendicitis case was as simple as any in civil life. The typhoid case was not so simple. In the first place, he had no right to have typhoid fever, as he had been inoculated twice within the year. And now came the test whether the hospital had an up-to-date scientific equipment. The laboratory was not large, but the man in charge knew his job. Just as a patient who has recovered from one attack of typhoid fever may have a second attack within a year, so an inoculated man may get a fresh infection, but this is rare. The reaction of the patient's blood serum to ordinary typhoid was present, as it should be in anyone after inoculations—so that was no help. Only a set of cultures from blood and stools could determine whether he had a fresh attack of ordinary typhoid fever or an attack of a similar, indeed identical, disease, caused by an allied germ, either paratyphoid A or B. After all, bacteriology is only a department of horticulture, and with the new method of growth of germs on solid media the strains of the typhoid germs are as readily determined as are the strains of sweet-pea. They have what are known as agglutinative reactions with the blood serum that are perfectly distinctive and to be seen with the naked eye. It was a tedious business, but plain enough at the end—a paratyphoid B infection against which his original inoculation was as powerless to protect as is small-pox vaccination against chicken-pox.

If the foes of our own household, the "anti's," would spend a few days at a hospital for infectious diseases, see the modern methods, and learn a few elementary facts about immunity, they could not but be impressed with the applications of scientific horticulture to disease, and be lost in admiration of a technique of extraordinary simplicity and accuracy.

The Prevention of Disease.

The second great victory of science in war is the prevention of disease. Apollo, the "far darter," is a greater foe to man than Mars. "War slays its thousands, Peace its ten thousands." In the Punjab alone, in 12 years, plague has killed two and a half millions of our fellow citizens. This year two preventable diseases will destroy more people in this land than the Germans. The tubercle bacillus alone will kill more in Leeds in 1915 than the city will lose of its men in battle. Pestilence has always dogged the footsteps of war, and the saying is true—"Disease, not battle, digs the soldier's grave." Bacilli and bullets have been as David and Saul, and at the breath of fever whole armies have melted away, even before they have reached the field. The fates of campaigns have been decided by mosquitoes and flies. The death of a soldier from disease merits the reproach of Armstrong:

> Her bravest sons keen for the fight have dy'd
> The death of cowards and of common men—
> Sunk void of wounds and fall'n without renown.

This reproach science has wiped away. Forty years ago we did not know the cause of any of the great infections. Patient study in many lands has unlocked their secrets. Of all the great camp diseases—plague, cholera, malaria, yellow fever, typhoid fever, typhus, and dysentery—we know the mode of transmission, and of all but yellow fever the germs. Man has now control of the most malign of Nature's forces in a way never dreamt of by our fathers. A study of her laws, an observation of her facts—often of very simple facts—has put us in possession of life-saving powers nothing short of miraculous. The old experimental method, combined with the new chemistry applied to disease, has opened a glorious chapter in man's history. Half a century has done more than a hundred centuries to solve the problem of the first importance in his progress.

Briefly, four things have been determined about the disease we call infections. First, that there are specific germs, which breed true, often showing varieties, as is so common in nature. Secondly, these disease seeds, artificially grown, may be recognised by biological and chemical characters, and will reproduce the disease when injected into a susceptible animal. Thirdly, in the growth and multiplication of the germs there are changes in the body fluids, associated with the production of what is called immunity, and these changes may be artificially induced by inoculation with the germs or the products of their growth. And lastly, many important diseases are transmitted by insects—ticks, mosquitoes, flies, lice, and fleas.

The question was how to translate this knowledge into practical effect. Well, it has been done, and done in this war as never before in history. A victory had to be won first in the army itself, in insisting upon the importance of sanitary education for all officers, and here again we have to thank Lord Haldane. In a larger army than we have ever before had in the field the incidence of disease has often been lower than in times of peace. In the West there has been no great epidemic—neither dysentery, typhus, nor cholera; and typhoid fever, the soldiers' foe, has so far been a negligible quantity. Think what it was in the German army in 1870–71, fighting over much the same ground and with an army of about the same size as our own, 74,204 cases and 8904 deaths. Peculiar conditions have caused peculiar maladies such as trench fever, trench feet, odd types of rheumatism and nephritis; but on the whole, when the figures come out for the first year of the war we shall find a great victory in the low death-rate from disease. In the East dysentery and forms of typhoid fever are troublesome, but the graver camp diseases such as cholera and typhus have not prevailed, and are not, I think, likely to do so.

The Treatment of Wounds.

And lastly, in the treatment of wounds science has made great advances. The recognition by Lister of the relation of germs to suppuration, an outcome of Pasteur's work, has done away with sepsis in civil life. High explosives, shell, and shrapnel make wounds that are at once infected by the clothing and dirt, and are almost impossible to sterilise by any

means at our command, but with free drainage, promotion of natural lavage from the tissues by Wright's method, and the use of antiseptics when indicated, even the most formidable injuries do well. The terrible laceration of soft parts and bones adds enormously to the difficulty in treatment. The X ray has proved a boon for which surgery cannot be too grateful to Roentgen and to the scores of diligent workers who have given us a technique of remarkable accuracy. Other electrical means for detecting foreign bodies have also given good results.

Of the germs blown into wounds from the soil and clothing and skin the pus-formers are the most numerous and most important. Two others have proved serious foes in this war, the germ that causes gas gangrene and the tetanus bacillus. I am told that methods of treatment of wounds infected by the former are giving increasingly good results. The soil upon which the fighting has occurred in France and Flanders is rich in the spores of the tetanus bacillus; the disease caused by it was at first very common and terribly fatal among the wounded. For centuries it has been one of the most dreaded of human maladies, and justly so, as it is second to none in fatality and in the painful severity of the symptoms. No single aspect of preventive medicine has been more gratifying in this war than the practical stamping out of the disease by preventive inoculation. In the first six months of this year there have been only 36 cases of the disease among those who received a protective inoculation within 24 hours of being wounded.

Is Science for or against Humanity?

And what shall be our final judgment—for or against science? War is more terrible, more devastating, more brutal butchery, and the organisation of the forces of nature has enabled man to wage it on a titanic scale. More men will be engaged and more will be killed and wounded in a couple of years than in the wars of the previous century. To humanity in the gross she seems a monster, but on the other side is a great credit balance—the enormous number spared the misery of sickness, the unspeakable tortures saved by anæsthesia, the more prompt care of the wounded, the better surgical technique, the lessened time in convalescence, the whole organisation of nursing; the wounded soldier would throw his sword into the scale for science—and he is right.

THE WAR AND INTERNATIONAL SCIENCE.

To one who is by temperament and education a Brunonian and free from the "common Antipathies" and "National repugnances"[5] one sad sequel of the war will be, for this generation at least, the death of international science. An impassable intellectual gulf yawns between the Allies and Germany, whose ways are not our ways and whose thoughts are not our thoughts. That she has made herself a reproach among the nations of the earth is a calamity deplored by all who have fought against Chauvinism in science, and a bitter regret to those of us who have had close affiliations with her, and lifelong friends among her professors, whose devotion to science has made every worker in every subject the world over their debtor. Even the philosophy of Rabbi Ben Ezra is strained in these days of passion:—

> Now who shall arbitrate?
> Ten men love what I hate,
> Shun what I follow,
> Slight what I believe,
> Ten who in eyes and ears match mine.

With death war dies, and there is no hatred in the grave. The past is unforgiving, but we all may—

> With uncovered head
> Salute the sacred dead
> Who went, and who return not.

It was a noble motive that prompted the Warden and Fellows of New College to put upon the roll of honour in their hall the name of a German Rhodes scholar, one of her sons, though an enemy, who had fallen in battle for his country, an action resented by certain narrow-minded Philistines in the press. I should like to pay a last tribute of words to Paul Ehrlich, one of the masters of science, who has recently passed away. Many will recall with pleasure his outstanding position at the last International Congress of Medicine. In micro-biology and in the biochemistry of cells he was a creator, and no one of his generation contributed so much to our knowledge of the relations of living matter and chemical compounds. His studies on immunity form a new chapter in pathology. The climax of many years of patient work on the specific affinities of chemical substances for certain cells and for protozoa was reached in the discovery of "606" as a cure for syphilis. The brilliant labours of such a man transcend national limitations, and his name will go down to posterity with those of his countrymen, Virchow and Koch, as one of the creators of modern pathology.

CONCLUSION.

I am afraid that the subject of my lecture has been what Robert Burton would call glucupicric—bitter-sweet. This old earth has rarely had a worse year than that through which we have just passed. Men's hearts are failing for fear, and for looking after those things which are coming upon it. Though final deliverance from strife will not be in our day, let us not despair. Only just awake, the race is sore let and hindered by passions and practices, strong as animal instincts, which millions of years of struggle have ground into its fibre. I have just finished reading Henry Osborn Taylor's last book, "Deliverance," in which he sketches the ways in which our ancestors of all times and countries have adapted themselves to the fears and hopes of their nature. From such a story of incessant and successful adjustments one may take a Pisgah-sight of a day when "nation shall not lift up a sword against nation, neither shall they learn war any more."

[5] Sir Thomas Browne, Religio Medici, pt. ii.: "I feel not in myself those common Antipathies that I can discover in others: those National repugnances do not touch me."

THE MEDICAL OFFICER OF HEALTH OF TRURO.—At the last meeting of the Truro city council the resignation of the medical officer of health, Mr. Hugh Culliford Sharp, B.A., M.B., B.C. Cantab., was accepted with every possible regret, and thanks were awarded him for the very efficient manner in which he had always performed the duties of the office.

GUY'S HOSPITAL MEDICAL SCHOOL.—The following entrance scholarships have been awarded:—Senior science scholarships for university students: Charles Walter Wylde Armstrong, St. John's College, Oxford (£75); and Harold George Burford, Christ Church, Oxford (£35). Junior science scholarship: Edward Henry Roche (£120) and Reginald Cyril Bell Ledlie (certificate), Preliminary Science Class, Guy's Hospital. Scholarships in Arts: Harold John Selby, Cheltenham College (£100); and Kenneth Herbert Hugh-Jones (£50), Bradfield College, Berkshire.

An Address
ON
WAR AND THE MEDICAL EDUCATION OF WOMEN.

Delivered at the London (Royal Free Hospital) School of Medicine for Women on Oct. 1st, 1915,

BY FLORENCE E. WILLEY, M.D., M.S. LOND.,
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LADIES AND GENTLEMEN,—The opening of the winter session of the Medical Schools comes this year in the midst of conflict such as the world has never seen before. You would scarcely wish me under the circumstances to discuss any other subject than the relation between the war, with its far-reaching effects, and the medical education of women, in the interests of which we are met to-day.

Those of us who at one time or another in the past have taken our places among the new students at this autumn gathering have always in our turn received a cordial greeting, but to-day—on behalf of my colleagues of school and hospital—I offer to you who are at the beginning of your career a very special welcome which has in it a warmth akin to that with which we silently greet bands of recruits as we meet them training for war service; for you, too, are entering upon a probation time of work which shall fit you to serve your country and humanity.

THE WAR AND WOMEN'S WORK.

It is becoming obvious to everyone that there is a very vital connexion between the war and women's work. The lack of labour, which is being increasingly felt on all hands, has opened the doors of various industrial pursuits to women who had long desired such an outlet for their energies, and has come as a call to service to others who had never before awakened to any need to use their talents for the common weal. The summons to women to fill up the ranks has come from all kinds of professions and trades, but in none perhaps is the demand more urgent than in the medical profession, and that for many reasons—immediate and future. The ever-increasing number of medical men and women employed in military service abroad, together with the number employed in either whole- or part-time military service at home, has taxed the resources of the medical profession to the utmost, for in these ways the war has directly absorbed the services of many thousands of doctors.

But in more indirect ways the war is creating a future need which threatens to be very serious indeed. Young men who would now be entering upon a training for some professional career are enlisting for naval or military service, and thus the supply of medical students in the men's schools is seriously diminished, and this means for years to come decreasing numbers of men in the profession of medicine. We must face the fact that if men are to answer the call of their country at this crisis they cannot make good this deficiency; hence women must; and that they are willing to do so is made clear by your magnificent response, doubling the usual entry of this school to-day, and is also shown by the largely increased entry of women medical students in Scotch and other schools.

But we have to realise that these changes are revolutionary and far-reaching in their character, for it means that women of all classes are being called upon to undertake pursuits involving the training and development of their physical and intellectual powers to an extent unknown before, and it may be that some are fearing whether this is compatible with the fulfilling of the country's great need of a sane and stalwart race. I believe it to be not only compatible with such a result, but so helpful towards it that one realises afresh that the world is founded on some deep principle which balances forces which make for race destruction with others which make for race development, and so secures an ever-advancing evolution.

We have before our eyes a striking lesson in how to raise the standard of health. The strenuous out-of-door life lived by soldiers in training has turned weakly, delicate-looking boys into robust stalwart men capable of feats of long endurance and with joy in the doing of them. It is the old principle which we have known so long, but are so slow to practise, that to use every latent power to the full is the talisman of health as well as the secret of greater talents, and this is true for men and women alike. Any national demand therefore such as that confronting us to-day, which calls women from indoor semi-inert habits to lives of activity and usefulness must raise and not lower the standard of general development.

MEDICAL WORK AFTER THE WAR.

But let us return to the more particular problem which confronts us, in which everyone present is more or less closely interested—the rapidly increasing number of women medical students, and the temporary decreasing number of men entering the profession. The proportion of women to men is, after all, of minor importance; the really serious question is whether the result of these changes will be a total loss or gain in numbers to the profession as a whole. There is very good reason to think that the tendency for some years will be towards a shortage of the total number of men and women required. So long as the war lasts such shortage is inevitable through the large and ever increasing numbers required in the Services, which leave very reduced staffs for hospital, private or panel practice, and for public home service. After the war there will unfortunately be more medical work required for invalided soldiers and sailors, but especially will there be need for more medical people in the public services if a thorough system of preventive medicine is to come into being; if, in fact, we are to exercise as a nation that economy in life and health which will be so necessary after a devastating war.

The terrible wastage and maiming of life now going on in Europe is pressing home to the public mind the necessity for putting an end to that preventable wastage and maiming which is the result of insanitary conditions and of disease; but it is the medical profession which must lead the way and must do the work involved in the realisation of this ideal.

Since the numbers available for this and other medical work must almost certainly be too few, the quality and training of every medical student becomes a question of vital importance. Under these circumstances it is incumbent upon all of us—men and women alike—who love our profession to look out upon the needs of the future with a vision cleared through our close acquaintance with the tragedies and demands of this strenuous time,

and with a desire, freed from all prejudice and self-seeking, that the coming generation of doctors, whatever the proportion of men and women, shall be worthy of the best traditions of the past, shall be equipped for their work as no generation has been before, and shall be inspired with high resolve to build on the ashes of a world disaster a healthier, sounder, and wiser humanity. With such an end in view it behoves us to disregard all lesser interests of sex or school or university, if such considerations conflict with that which must be our contribution to the future—a young race of doctors who have been started in their career with every ounce of help it has been possible to bestow. There are many signs that this duty is already making itself felt and is, indeed, prompting different groups of people to serious consideration and to action.

DEVELOPMENT OF THE SCHOOL AND HOSPITAL.

Perhaps the most obvious illustration of what I mean is the building which we see rising at our doors for a very considerable and important extension of these premises—an extension which not only includes more lecture-rooms and laboratories, but also accommodation for the prosecution of research such as it has never been possible to arrange before. Closely associated with this development for primary subjects is the plan for doubling the resources of the Royal Free Hospital, which will not only enable the hospital to meet more effectively the needs of the poor in its neighbourhood, but will also provide very complete clinical facilities for the training of the students of this school. In these facilities we confidently hope that you, who are in the early stages of your work, will share, for although the building is not at the moment rising before our physical eyes, it is already built in the creative sphere of our imagination; and the site, which is a very large and valuable one, has already been changed by a magic wand from the land of desire into the land of actuality. That swift transformation reminded me of the definition of will given by an old psychologist. He said, "Will is a wish in action." It was just that which has put us already in possession of the site of the extended Royal Free Hospital—a generous wish in action. It has given us hope and confidence that others will now wish the building with the same practical intensity.

The extending out-patient work of the hospital is already provided for in the building which was completed just before the war began. That building also contains modern equipment for the first instalment of development in maternity work, which must play so large a part in the preventive medicine of the future, as well as for extensions in pathology and in X ray, electrical, and massage treatment. This building was handed over to the War Office just after its completion, and is at present doing war service as a hospital for wounded officers, but when it reverts to the part it is designed to play in the work of a civil hospital its arrangements will allow of greatly extended work in medicine and surgery and in the special departments, with extension of the facilities through consultative work to the doctors doing private practice in the neighbourhood.

The special training in nose, throat, and ear work and in the ophthalmic and children's departments will prepare you for future work under the Board of Education; and the clinics for gynæcology, midwifery, and for antenatal and infant care will be useful to you both as students and as graduates in acquiring the knowledge necessary for preventive work under the Local Government Board or what may in the future be a Ministry of Health.

You who are already working at hospital must realise that all these out-patient developments involve still greater need for beds to make the work really effective for patients or students: hence the appeal which is being made for increased facilities not only to alleviate or cure the sufferings of the present, but to prevent disease in the future, and last, but not least, to equip medical women to do the best possible work in the service of their generation.

THE POSITION AT OTHER SCHOOLS.

The Royal Free Hospital and School, however, is not the only teaching institution where the changes brought about by the war have led to serious thought how best to contribute to the needs of the future. It is, I suppose, an open secret to teachers and students alike that the opening of other schools and hospitals to women students, though hitherto closed to them, is now a matter of careful consideration. It seems, indeed, fairly obvious that since medical women are needed, all who can in any way minister to their efficiency are rendering real service to the medical profession as a whole by so doing.

But the other medical schools are faced with problems and difficulties to which we in this school are strangers. Some questions they have to consider are: How will co-education in medicine work? Will the presence of women drive away the men? Will the presence of men students prevent women from coming to the school? Will women expect after student days are ended to occupy posts of responsibility? May they aspire to staff appointments? Might they even at some time outnumber men on the staff? On the other hand, we of the London (Royal Free Hospital) School of Medicine for Women may ask ourselves, What will become of our school if all these other attractions come into competition with us? I venture to think that if we take the broader view of what will best conduce to a well-educated experienced race of doctors such minor difficulties will vanish away. For our own part, the effect of friendly rivalry is never harmful but always good. The effect on our own school and hospital of competitors in the medical education of women would be to make us all more determined that it shall be surpassed in efficiency by none.

Those of us assembled here to-day do not envy the women of the future who may come to love another *alma mater;* we shall ever be proud to belong to that school which has opened not only its own doors, but all doors in the profession, to women, and we shall love our own hospital which first dared the dreaded experiment of trusting women with positions of responsibility as no other hospital can be loved which merely follows its example.

And the other schools who really desire to help in the education of women students, they will naturally open appointments from the lowest to the highest to men and women alike, for all know that the post-graduate education which experience and responsibility give is more important than any student work, and no hospital can be said to truly educate which withholds such experience. In so far as these facilities are given, the invitation to women students would be sure to meet with response; in so far as they are withheld few women are likely to avail themselves of the open door.

POST-GRADUATE WORK.

Such are some of the demands and changes which the war has hastened with regard to the early medical education of women. But though you, who are entering upon your medical career, look forward perhaps to the day when you shall take your diploma as the date when your medical education shall end, it will indeed be the day on which it begins, for education—the leading forth of that which is best in the individual—only has its chance to begin when responsibility is the teacher.

Has the war anything to say regarding the post-graduate education and work of medical women? I think it has. There is work waiting to be done which had made its need felt before any war came, but which is doubly insistent in its claims to-day. I refer to all that work, yet in its infancy, which has as its object the preservation of child life and health, and the work of preventive medicine which claims for the civil population, as well as for the military, that all diseases which arrest development of the young or impair the health and efficiency of the adult must be wiped out. For much of this work women have special facilities and if, as seems likely, women are to form a much larger proportion of the profession in the future than they have done in the past, it is only reasonable to expect that they shall undertake a considerable share of work which is specially their duty to perform.

Some branches of medical work preventive in character which will repay all the vitality and enthusiasm which you, the coming race of medical women, can give it are: 1. The study and care of pregnancy, including pathological research into the causes of antenatal death. 2. The study of the art of obstetrics, which should include all that makes for skilful delivery on the one hand and relief of pain on the other. 3. The study of those conditions which lead to a high infant mortality and a low standard of health in childhood. 4. The prevention of such diseases as hinder conception, kill the unborn, maim childhood, and produce chronic invalidism in women. The importance of such work may be brought home to us to-day if we realise that had it been successfully prosecuted 40 or 50 years ago it would have given us to-day more than a million young men of military age, with a similar number of young women, to spend their strength in the service of the country at this hour of stress; these have perished, for every year at least 100,000 infants were lost to us in the first year of life and 150,000 more perished from antenatal causes.

All these subjects involve a type of research which has been comparatively little recognised in medical circles, but which is every day becoming more essential to the success of preventive medicine. We do not only need to link together the worker in the laboratory and the clinician, but also the sociologist, and as it has been recognised in the past that the clinician and the pathologist should work in closest connexion, if not partly sharing each other's work, so to-day it is becoming increasingly clear that the doctor who would stamp out disease and not merely cure individual cases must have an intimate acquaintance with the lives and habits of the people whom it is desired to protect.

Consider, for example, how such combined study would influence the subjects just suggested.

The Study and Care of Pregnancy.

1. We believe that the ordinary laws of hygiene demand a certain standard of general nutrition, fresh air, cleanliness, &c., for healthy pregnancy, yet social research tells us that the conditions under which thousands of mothers live do not allow of this. Ought we not to know with certainty if the race is deteriorated by these disabilities, and, if so, make it clear to those who have the power to change them? We believe that muscular exercise is good and certain kinds of excessive strain bad for mothers, but we do not know fully whether it is better or worse for women to occupy themselves in the ordinary paid employments at this time, or to do their own housework under the difficult conditions existing in many homes of the poor.

We are coming to realise that every mother ought to be under medical supervision if diseases and discomforts of pregnancy are to be recognised and relieved, and that this is one of the most important means of lowering the present high rate of antenatal mortality; but we are still far from arranging that every woman under the care of a midwife shall be examined even once by a medical man or woman. The recent action of the Local Government Board in encouraging the arrangements for antenatal clinics will probably do much to render possible this desirable result; but it is clear that if the care of pregnancy is to be anything more than a name it must entail greatly increased work by skilled people.

Although we know that antenatal mortality equals or exceeds infant mortality in the first year of life, we are to a very large extent ignorant of its causes; the greater number of cases, however, the study of which would give us insight into these questions are lost sight of in infirmaries. It was one of the cherished desires of the late Dean of this school that the material for clinical teaching and research in the infirmaries might be made more available for students, under-graduate and post-graduate. Quite certain is it that if antenatal mortality is to be adequately dealt with either accommodation must be found for such cases in general or lying-in hospitals or the medical staffs and laboratory equipment of infirmaries must be greatly increased.

The Art of Obstetrics.

2. The art of obstetrics has changed from the hands of the physician to those of the surgeon. The technique is that of modern surgery. Yet much of it is practised in rooms where no other surgical operation would be entertained. It is true that one of the surgeons in the trenches on the Western front wrote home the other day that he was fitting up a neighbouring pigsty as his surgery, but he had the advantage, we presume, of turning out the former inhabitants and their belongings before arranging his equipment. There are two possible remedies we may adopt—either to have working-class homes in which one room is available apart from the family life, or to have sufficient lying-in hospitals to accommodate those mothers who are denied such luxury. By the generosity of Her Grace the Duchess of Marlborough, we have been able to open one such hospital at 20–21, Endsleigh-street which will accommodate 20 patients. There you will have the opportunity of doing some of your obstetric work under hospital conditions, while our own maternity department is required for wounded officers.

Again, we have thought too little in the past about the relief of suffering in obstetrics. True it is that Sir James Simpson's discovery of chloroform years ago put a great remedy in our hands for relief of pain, but what proportion of women are relieved by it or any other drug from the pain of childbirth? It is well within the truth to say less than half. Yet should we accept with complacency the knowledge that half the painful operations in the

country were still performed without an anæsthetic? It is for you to use and compare the means we now have or may have in the future to relieve suffering, and to render them available for all women and not for the few, for pain, however bravely borne, leaves a patient nervously exhausted, and this is true of so-called natural pain as well as of that artificially produced.

Infant Care.

3. The study of infant care also teaches us how necessary it is to link social facts with laboratory calculations in order to arrive at a true result. Some professors in the laboratory dealing with statistics would have us believe that, given a poor stock, no change of environment will save infant life or make of the surviving child a useful citizen; but when we realise how the work done to improve environment has lowered infant mortality in the great cities in Great Britain and on the continent, and that the standard of child health in any district varies inversely with infant mortality, we know that there is a flaw somewhere in the calculation.

In considering how to save infant life we cannot forget the large proportion of illegitimate children untraceable after the first year of life. As you well know, serious effort has been made to combat this loss, both in the inspection of singly boarded-out children since the Children Act and in the recent important extension of the Notification of Births Act which came into force a month ago. But even this extension in itself will not save the children. It gives to the authorities the knowledge of the fact of birth, but if that child (and I had almost said the mother too) is to be saved, mother and child must be kept together. Efforts in the past have been directed towards suitably boarding out children and providing the mother with other work, but medical knowledge should point out to the ardent sociologist that the child needs the mother and the mother needs the child, and no arrangements for their true welfare can contemplate their separation. I believe foster-mothers have been one of the curses of the country. Can a mother forget her child? asked the prophet. Yes, she may forget if it is taken from her to become the child of another woman. That is the great disaster for both.

The Abolition of a National Scourge.

4. And with regard to the prevention of disease which kills child life and invalids women, surely medical women must do their part in the abolition of a national scourge as it affects their own sex, both in the preventive work of education and in the curative work, which is also preventive, in hospitals arranged for the purpose. This is work yet waiting for medical women to do—to cure disease and at the same time to restore self respect to spirits which have been broken for lack of it.

CONCLUSION.

I have tried feebly to suggest a few of the many enterprises waiting for you and for as many companions as you can persuade to join you in the great profession of medicine. Do not fear that all will be done before you are qualified to help. It will be for you to see farther into the future than we can to-day, and new ideals and standards will come with new times; but do not let dreams of what lies ahead prevent you from making good step by step the road of hard work that lies between. You need not fear to be idealists if you are working to make real the bit that lies nearest to your hand. Keep your gaze on the far distance, but have an eye for the obstacle on the road that may puncture your tyre.

UPON SPASMODIC SYMPTOMS IN RHEUMATISM.

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IN the study of disease it is unfortunate that we are repeatedly disappointed by the discovery that pathological conditions to which we are attributing clinical symptoms repeatedly prove to be themselves of the nature of scar-tissue, and as a result, though palliative treatment of the symptoms may be adopted with fair measure of success, this is the best that we can expect. Probably no more striking example can be found in illustration than that of chronic rheumatic or other infective heart disease. If we consider the care devoted to such cases, the laborious researches into their intimate pathology, and the many hours devoted to the teaching of their symptoms, we cannot but feel discouragement when we know that we are always too late in the field to do the best for them. Perhaps sometimes, it would not be saying too much if we admit that we are training another generation to study heart disease at a stage when it is established and incurable rather than interesting them in its earlier developments. Much attention, for example, may be devoted to a curious cardiac murmur or an adherent pericardium, when a child with chorea and early dilatation will attract but little interest. All phases of disease are undoubtedly deserving of the closest investigation, both because we learn facts which prove of value in the treatment of our patients, and also because we can never foresee when some penetrating intellect may discover, even in an advanced stage of an illness, some fact which may entirely alter our previous opinions. It is, however, the earliest phases that are of the first importance, and the trend of modern medicine is undoubtedly towards the pushing back of our knowledge of diseases from the regions of gross pathology to those of the minor and sometimes transitory pathological phenomena. Yet this is a difficult and treacherous study; because there are in the earlier phases of disease so many possibilities of error in the interpretation of the symptoms that we attribute to these minor phenomena; and because in these earlier phases death does not usually occur, and so the correctness of the opinions that are formed must be often open to question.

At the time when the investigation of gross pathology was at its height there was a certain wise caution in the refusal of some minds to accept any unusual or unexpected clinical evidence unless the post-mortem proof was also forthcoming. Few now, I suppose, would entirely hold this view, and not admit that we are more likely to make progress by endeavouring to explain such symptoms even though no post-mortem evidence should be forthcoming, provided that we invariably recognise the wide margin for error that must be admitted. Modern studies, too, are certainly bringing us assistance in this direction. For instance, there are certain results of serum injections which have been observed so often and are so definite that we are sure that they are dependent upon these injections, however difficult the exact explanation may seem. Again, if we give thyroid extract to a cretinous child or we interrupt a thyroid course in the same patient we know that certain symptoms will disappear or reappear as the direct outcome,

POST-GRADUATE WORK.

Such are some of the demands and changes which the war has hastened with regard to the early medical education of women. But though you, who are entering upon your medical career, look forward perhaps to the day when you shall take your diploma as the date when your medical education shall end, it will indeed be the day on which it begins, for education—the leading forth of that which is best in the individual—only has its chance to begin when responsibility is the teacher.

Has the war anything to say regarding the post-graduate education and work of medical women? I think it has. There is work waiting to be done which had made its need felt before any war came, but which is doubly insistent in its claims to-day. I refer to all that work, yet in its infancy, which has as its object the preservation of child life and health, and the work of preventive medicine which claims for the civil population, as well as for the military, that all diseases which arrest development of the young or impair the health and efficiency of the adult must be wiped out. For much of this work women have special facilities and if, as seems likely, women are to form a much larger proportion of the profession in the future than they have done in the past, it is only reasonable to expect that they shall undertake a considerable share of work which is specially their duty to perform.

Some branches of medical work preventive in character which will repay all the vitality and enthusiasm which you, the coming race of medical women, can give it are: 1. The study and care of pregnancy, including pathological research into the causes of antenatal death. 2. The study of the art of obstetrics, which should include all that makes for skilful delivery on the one hand and relief of pain on the other. 3. The study of those conditions which lead to a high infant mortality and a low standard of health in childhood. 4. The prevention of such diseases as hinder conception, kill the unborn, maim childhood, and produce chronic invalidism in women. The importance of such work may be brought home to us to-day if we realise that had it been successfully prosecuted 40 or 50 years ago it would have given us to-day more than a million young men of military age, with a similar number of young women, to spend their strength in the service of the country at this hour of stress; these have perished, for every year at least 100,000 infants were lost to us in the first year of life and 150,000 more perished from antenatal causes.

All these subjects involve a type of research which has been comparatively little recognised in medical circles, but which is every day becoming more essential to the success of preventive medicine. We do not only need to link together the worker in the laboratory and the clinician, but also the sociologist, and as it has been recognised in the past that the clinician and the pathologist should work in closest connexion, if not partly sharing each other's work, so to-day it is becoming increasingly clear that the doctor who would stamp out disease and not merely cure individual cases must have an intimate acquaintance with the lives and habits of the people whom it is desired to protect.

Consider, for example, how such combined study would influence the subjects just suggested.

The Study and Care of Pregnancy.

1. We believe that the ordinary laws of hygiene demand a certain standard of general nutrition, fresh air, cleanliness, &c., for healthy pregnancy, yet social research tells us that the conditions under which thousands of mothers live do not allow of this. Ought we not to know with certainty if the race is deteriorated by these disabilities, and, if so, make it clear to those who have the power to change them? We believe that muscular exercise is good and certain kinds of excessive strain bad for mothers, but we do not know fully whether it is better or worse for women to occupy themselves in the ordinary paid employments at this time, or to do their own housework under the difficult conditions existing in many homes of the poor.

We are coming to realise that every mother ought to be under medical supervision if diseases and discomforts of pregnancy are to be recognised and relieved, and that this is one of the most important means of lowering the present high rate of antenatal mortality; but we are still far from arranging that every woman under the care of a midwife shall be examined even once by a medical man or woman. The recent action of the Local Government Board in encouraging the arrangements for antenatal clinics will probably do much to render possible this desirable result; but it is clear that if the care of pregnancy is to be anything more than a name it must entail greatly increased work by skilled people.

Although we know that antenatal mortality equals or exceeds infant mortality in the first year of life, we are to a very large extent ignorant of its causes; the greater number of cases, however, the study of which would give us insight into these questions are lost sight of in infirmaries. It was one of the cherished desires of the late Dean of this school that the material for clinical teaching and research in the infirmaries might be made more available for students, under-graduate and post-graduate. Quite certain is it that if antenatal mortality is to be adequately dealt with either accommodation must be found for such cases in general or lying-in hospitals or the medical staffs and laboratory equipment of infirmaries must be greatly increased.

The Art of Obstetrics.

2. The art of obstetrics has changed from the hands of the physician to those of the surgeon. The technique is that of modern surgery. Yet much of it is practised in rooms where no other surgical operation would be entertained. It is true that one of the surgeons in the trenches on the Western front wrote home the other day that he was fitting up a neighbouring pigsty as his surgery, but he had the advantage, we presume, of turning out the former inhabitants and their belongings before arranging his equipment. There are two possible remedies we may adopt—either to have working-class homes in which one room is available apart from the family life, or to have sufficient lying-in hospitals to accommodate those mothers who are denied such luxury. By the generosity of Her Grace the Duchess of Marlborough, we have been able to open one such hospital at 20–21, Endsleigh-street which will accommodate 20 patients. There you will have the opportunity of doing some of your obstetric work under hospital conditions, while our own maternity department is required for wounded officers.

Again, we have thought too little in the past about the relief of suffering in obstetrics. True it is that Sir James Simpson's discovery of chloroform years ago put a great remedy in our hands for relief of pain, but what proportion of women are relieved by it or any other drug from the pain of childbirth? It is well within the truth to say less than half. Yet should we accept with complacency the knowledge that half the painful operations in the

country were still performed without an anæsthetic? It is for you to use and compare the means we now have or may have in the future to relieve suffering, and to render them available for all women and not for the few, for pain, however bravely borne, leaves a patient nervously exhausted, and this is true of so-called natural pain as well as of that artificially produced.

Infant Care.

3. The study of infant care also teaches us how necessary it is to link social facts with laboratory calculations in order to arrive at a true result. Some professors in the laboratory dealing with statistics would have us believe that, given a poor stock, no change of environment will save infant life or make of the surviving child a useful citizen; but when we realise how the work done to improve environment has lowered infant mortality in the great cities in Great Britain and on the continent, and that the standard of child health in any district varies inversely with infant mortality, we know that there is a flaw somewhere in the calculation.

In considering how to save infant life we cannot forget the large proportion of illegitimate children untraceable after the first year of life. As you well know, serious effort has been made to combat this loss, both in the inspection of singly boarded-out children since the Children Act and in the recent important extension of the Notification of Births Act which came into force a month ago. But even this extension in itself will not save the children. It gives to the authorities the knowledge of the fact of birth, but if that child (and I had almost said the mother too) is to be saved, mother and child must be kept together. Efforts in the past have been directed towards suitably boarding out children and providing the mother with other work, but medical knowledge should point out to the ardent sociologist that the child needs the mother and the mother needs the child, and no arrangements for their true welfare can contemplate their separation. I believe foster-mothers have been one of the curses of the country. Can a mother forget her child? asked the prophet. Yes, she may forget if it is taken from her to become the child of another woman. That is the great disaster for both.

The Abolition of a National Scourge.

4. And with regard to the prevention of disease which kills child life and invalids women, surely medical women must do their part in the abolition of a national scourge as it affects their own sex, both in the preventive work of education and in the curative work, which is also preventive, in hospitals arranged for the purpose. This is work yet waiting for medical women to do—to cure disease and at the same time to restore self respect to spirits which have been broken for lack of it.

CONCLUSION.

I have tried feebly to suggest a few of the many enterprises waiting for you and for as many companions as you can persuade to join you in the great profession of medicine. Do not fear that all will be done before you are qualified to help. It will be for you to see farther into the future than we can to-day, and new ideals and standards will come with new times; but do not let dreams of what lies ahead prevent you from making good step by step the road of hard work that lies between. You need not fear to be idealists if you are working to make real the bit that lies nearest to your hand. Keep your gaze on the far distance, but have an eye for the obstacle on the road that may puncture your tyre.

UPON SPASMODIC SYMPTOMS IN RHEUMATISM.

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symptoms for which we require no post-mortem evidence to prove the association.

I dwell upon such general statements as these because I shall be dealing here with transitory symptoms which are not explained by the clear evidence of post-mortem examination and whose interest lies in the possibility that their study may be of help in throwing light upon the difficult early phases of the rheumatic processes the permanent and later of which are now well known. It is with spasmodic phenomena and not permanent symptoms that I am concerned.

In arthritis deformans the occurrence of vascular spasm and of transitory nervous phenomena have been well recognised, and Dr. R. Ll. Jones Llewellyn, in his monograph upon the disease, has emphasised their interest and importance by not only detailing his own experience, but adding also the observations of others. These investigations have such close bearing upon this paper that I must refer to them later in some detail, turning aside first to consider briefly the terms arthritis deformans and acute rheumatism.

The cases I shall mention all occurred in patients whom I could see no reason to believe were suffering from arthritis deformans, but that the symptoms were comparable to those described in that disease by Dr. Llewellyn and others will be evident. The nature of arthritis deformans is, we know, a very vexed problem, yet one, I think, about which we see far more clearly than we did formerly. To-day we realise much more plainly the part infective agents may take in the production of rheumatic phenomena, and we have also definite facts at our disposal which throw light upon these diseases. For instance, we know that an infection in an animal may not only produce a transient rheumatic arthritis, but also an osteo-arthritis or chronic peri-articular arthritis of the rheumatoid type. This fact alone warns us not to lay overmuch stress upon any one pathological condition as a proof of a specific cause. Again, though possibly we may be carried away somewhat by enthusiasm, we have also learnt much about the relation of dental disease to arthritis deformans, and we recognise that such known infections as the gonorrhœal or tuberculous may produce the condition.

I think it would not be very far wrong to state that we have narrowed down the problem to a large group of cases of obstinate non-suppurative arthritis accompanied by other symptoms of general disease for which no cause has yet been certainly ascertained. We are almost convinced, I think, these are infective in origin, but realise that the difficulty of proof lies in their chronicity and little danger to life. To put this position brutally, if we could take a hundred of these patients in the acuter phases, kill them, and at once investigate their tissues, we should in all probability find the infective agent or agents causing the damage. I am not supposing that we should then understand the disease, but we should ascertain the spark that set it on fire. Such drastic research being out of the question, as a working hypothesis it would seem reasonable to look for the solution either in the demonstration of some streptococcus bearing a relation to the septic and rheumatic streptococci analogous to that of the paratyphoid infections to enteric, or of a staphylococcus bearing the same relation to others of the staphylococcal group that the rheumatic streptococcus does to other streptococci. Possibly both views may be correct, and there is a certain amount of evidence in favour of them both. Of this I feel convinced, that the more closely we study arthritis deformans and "acute rheumatism," the greater is the difficulty in making them fit into those little pigeonholes into which our medical minds love to pack human diseases. The cases in this article will serve to emphasise how closely the symptoms in these diseases may approach one another.

The occurrence of vaso-motor phenomena in arthritis deformans, I repeat, has been recognised by various authors. Kent Spender was struck by the purple-blue cold hands, and Llewellyn has described cases in which the vaso-motor disturbances have been so severe as to be indistinguishable from those of Raynaud's disease, and he argues from these more severe cases that the lesser manifestations are but minor results of the same process. Dr. C. J. Macalister has also emphasised the same facts. Both he and Llewellyn independently insist upon the occurrence of these vaso-motor phenomena as preceding the arthritic manifestations by some considerable interval of time, a point which is clearly of great clinical importance.

Now, when we turn to the rheumatic child and young adult we find that there is a general agreement that these patients are often highly sensitive and unstable. Acute, bright, and restless, they are also frequently deficient in vitality. They tire easily, feel abrupt changes of temperature, and show a nervous disposition, which may aptly be termed "high-strung." In such subjects as these vaso-motor spasm may reasonably be expected to occur with some frequency. It is an interesting speculation whether these peculiarities in constitution are due to a congenital error of tissue formation or are the results of the poison of the infection. It has certainly been my experience to find parents assure me that children who, previously to an attack of cerebral rheumatism (chorea) had seemed to them to be normal, have ever since that illness altered in character and constitution, and have shown an instability unnoticed before. This, so far as it is permissible evidence, suggests that in these cases the infection was responsible for the change.

Passing from these general effects of the infection, we come closer to the vaso-motor problem when we recall the remarkable liability of some of these children to severe *migraine*. It is a frequent and sometimes a remarkable symptom in the rheumatic, and I have records of such children whom I have kept under observation for years, and of whom the parents have said that this symptom was the most distressing one in their condition. One child in particular, who had survived a severe rheumatic carditis, developed some years later an exacerbation of prostrating headaches of this kind which proved to be the direct forerunner of a second and fatal attack of acute rheumatism. I admit that the occurrence of migraine is no proof that it is of vaso-motor origin, but it would be equally unwise in the face of other conditions to be mentioned later to deny that such an explanation may be the true one.

We come now to the next group of cases showing definite *vaso-motor changes*, and which are strictly comparable to those already alluded to above as occurring in arthritis deformans. The following are examples:—

CASE 1.—A girl, aged 12 years, came into hospital under my care suffering from acute rheumatic carditis. This attack was a first one and commenced with a sore throat followed by multiple arthritis and severe general pericarditis with

mitral endocarditis. There was not a single feature in the case to separate it from the numerous examples of acute rheumatism in the young with which we are all familiar. After a very severe illness she made a good recovery, and after a long convalescence her heart compensated for the permanent damage. Eighteen months later she again came under my care, but this time for entirely different symptoms. The organic disease of the heart was obvious and compensation had been well maintained, but now both hands and forearms would become cold and blue in paroxysms which produced much pain and discomfort. The first indications had commenced in the hands during the winter following her attack of rheumatism of the previous autumn. The symptoms had always been intermittent, but had gained steadily in severity and frequency. The fingers were blue and swollen and the forearms purplish-red up to the elbows. Cold produced well-marked asphyxia. In the earlier stages "dead hands" had been frequent. The feet, though very often cold, were not affected in at all the same degree. Treatment by electric baths and massage resulted in great improvement, and during the following summer the patient remained very much better. While in the hospital she had occasionally some pains in her joints and muscles suggestive of a slight degree of active rheumatism.

The appearance of the hands closely resembled that seen in Raynaud's disease; the paroxysmal character and influence of cold were also most suggestive. The extent of the affected areas was rather remarkable when taken together with the absence of any sign of the gangrenous stage, even in the distal phalanges. Lastly, the definite attacks of marked asphyxia on exposure to cold were distinct.

CASE 2.—The patient, a girl aged 13 years, had suffered from acute rheumatism with carditis. The attack was a less severe one than in the former case, and although a mitral lesion resulted it was well compensated. Nine months later the mother brought the patient to me for numbness and coldness of the left hand, which frequently went "dead," and in cold weather would also turn blue and give rise to much pain when the asphyxial stage was present. The other hand had apparently not suffered. The condition was a milder example of the preceding one, and showed the same features. There was improvement under the same treatment.

CASE 3.—The third case, though not so convincing, was also a very interesting one. The patient, a married woman aged 42, was admitted with the symptoms of severe Raynaud's disease in both hands. All the finger-tips showed areas of necrosis of varying degrees of severity, and offensive sores had resulted with destruction of tissue. The hands were leaden in colour and very cold. There were also two superficial plaques, one above each outer malleolus, but otherwise the lower extremities were not affected in a degree comparable to the upper. For 11 years this patient had suffered from a "bad" circulation in her hands, but during the last winter severe attacks of spasm with cyanosis had supervened and produced the serious condition that was presented. She had well-marked mitral stenosis with all the physical signs that point to a very slow and gradual contraction of the mitral valve; a case in which stenosis was the predominant and practically the only lesion. There was no evidence of syphilis and the Wassermann reaction was negative.

Disturbances of the peripheral circulation in mitral stenosis are well known. They may take the form of cold and blue extremities, and in severe cases a gangrene of part of a digit may result from an arterial embolus or from circulatory failure, but in this case the paroxysmal character of the phenomena, the influence of cold, the extent of the gangrene, and the absence of any signs of failure of cardiac compensation, made it clear that a vasomotor contraction was predominant. The patient in Case 3 had never suffered from rheumatic arthritis or chorea, and it is justifiable to consider it possible that the mitral stenosis was of the nature of a rheumatoid cardiac affection and to claim the case in this group. Such a claim would, however, need a readjustment of our views of the etiology of mitral stenosis, which hardly seems indicated at present. It may be added that there was no evidence in the family history or sign in the patient of tuberculous disease.

In addition to these more severe cases, I have met in rheumatic children with examples of the minor degrees of spasm as evidenced by sudden coldness and deadness of the hands, to which my attention has been directed either by the children themselves or their parents. It is apparent, then, that just as in arthritis deformans all grades of vascular spasm are met with, so, too, in acute rheumatism we find the same conditions, and the part that they take in the symptomatology of the disease is perhaps not yet fully appreciated.

Another incident in the history of arthritis deformans is *muscular spasm*. French writers have laid stress upon the symptom, and again both Llewellyn in 1903 and Macalister have insisted that these spasms may be warnings that precede any evidence of arthritis. They may occur in the hands and feet, arms or legs, and even in the neck. Similar spasms also occur in those who have suffered from acute rheumatism. At the present time I have under my observation a girl aged 10 years, who in the late spring was an in-patient for acute rheumatism with carditis, and who, a year previously to this, had suffered from an attack of chorea. At the present time she is comparatively free from severe rheumatic symptoms, but in addition to some fleeting muscular pains her left hand in the morning is liable to become tightly clenched by a flexor spasm which her mother states can only be overcome by prising up the fingers. There is no pain on movement but an inability to open the hand voluntarily. One other rheumatic manifestation is present, and this is an erythema which in places becomes purpuric in character. This case is the counterpart of one quoted by Llewellyn in which the mother of a child suffering from arthritis deformans had to force open the fingers with a spoon. This case, too, is a very clear instance of a group of examples that I have met with from time to time over some ten years, occurring in patients who have shown no signs that we should consider would be those of arthritis deformans, but have suffered from indubitable evidences of "acute rheumatism." Another case also under observation at present is a little girl aged 8 years, who, among other rheumatic symptoms, complains of a sudden spasm of the muscles of the neck which draws back her head and which she describes as feeling like a flash of fire in the neck.

In another group are comprised cases which show *paroxysmal sensory symptoms*. In arthritis deformans we find that tingling and numbness and "pins and needles" are frequent early events and that they are most often confined to the extremities. In "acute rheumatism" we find precisely the same occurrence. Children tell us of these sensations in their hands, and the most frequent sensory disturbance in chorea has been, in my experience, a complaint of "pins and needles" in the hands and forearms.

More rarely we meet in the rheumatic child with severe neuralgic symptoms which may be most difficult to interpret. One case in particular which attracted my attention was that of a girl aged 6 years who had suffered from a definite attack of carditis and arthritis. Six months later she was brought to be treated for an intense pain always localised to the lower end of the right fibula. This was paroxysmal and so severe that the child cried out

with the suffering it produced. I could find nothing to account for this—no thickening, no local tenderness, no impairment of the movements of the right ankle, and no swelling. An X ray photograph showed no change of any kind. At first perhaps the most favoured view was that a deep tuberculous focus was present in the fibula, but the entire absence of any local evidence was opposed to it. This symptom lasted on and off for quite twelve months, disappearing sometimes for intervals of weeks. At last the child came again with a rheumatic arthritis of several joints—wrists, elbows, and knees, but not of the ankles, and after this attack the neuralgic symptom disappeared in as mysterious a fashion as it had appeared. So curious was this symptom at its worst that the idea that it might be purely functional was carefully considered. The occurrence of severe neuralgia in arthritis deformans is well recognised, and muscular cramps are symptoms common to both diseases.

In adults suffering from inveterate rheumatism and mitral stenosis I have records of very intense neuralgic pains in the limbs. In one case an agonising pain shooting down the outside of the calf of the left leg would come on abruptly and last for some minutes, and yet no local lesion of any kind could be detected. These attacks, just as in the child, would vary in frequency, but they were repeated for many months. Yet another compared the sensation to scalding water poured on her leg, and we find exactly the same history in Dr. Llewellyn's monograph as occurring in cases of arthritis deformans.

It may not be straying too far, while considering these paroxysmal symptoms, to mention those rare cases of acute rheumatism that are followed by sclerodermia. In some of these it is recognised that Raynaud phenomena of a severe degree may also be present. In a case of this kind occurring in a young girl aged 13 I could find no reason for calling the initial attack an acute arthritis deformans, for in the course and the nature of the cardiac lesions it appeared to be a clear case of acute rheumatism until the supervention of the rare complication of sclerodermia.

The next group of cases is one which is particularly interesting on account of the gravity of the symptoms. They comprise cases of carditis with aortic disease of rheumatic origin, which even in the young are characterised by *anginal attacks* of great frequency. These are very different in their features from the classical cases of angina pectoris in the middle-aged which have been the theme of some of the most brilliant writings in medical literature. They are associated with grave endocardial lesions, but above all the anginal attacks may be extraordinarily frequent in their occurrence. These cases seem to bridge over the old divisions of angina and pseudo-angina, showing the characters which were once thought to be peculiar to each. There is no practitioner who has the care of a patient with aortic regurgitation who does not look upon such symptoms as acute pain in the præcordium passing along the left arm with numbness of the affected limb and a sense of impending death varied by syncopal attacks as signs of great danger; yet in spite of all these symptoms and the cardiac damage, the functional element is so prominent in these cases that I have found that in three at least these anginal attacks have been eventually considered to be pseudo-anginal if not even fictitious. Two of these patients, however, died suddenly and unexpectedly. One was found dead in bed and an inquest was called for; the other, annoyed by some change in the arrangements made for her admission to hospital, where previously she had been somewhat indulged, died in an attack precipitated by her loss of control. These cases then clearly carried with them the danger of true angina, but, as I have already stated, they also showed during their life-time so many functional symptoms, and developed attacks with such slight provocation and so frequently, that had it not been for the obvious aortic disease they might well have been looked on as cases of "pseudo-angina," and even, perhaps, of hysteria. For weeks an evening or night attack would occur with regularity, and not infrequently a second would come on in the early hours of the morning. They occurred equally when the patient was entirely bedridden and were increased by excitement or by any improper diet. The pain may be very severe, and, though one is loth enough to use it, morphia may be the only satisfactory means for its relief. When this phase is over the patient remains free for months and then again the same storm of attacks may recur. Post-mortem examination has not shown me any peculiar feature in the heart, aorta, or coronary vessels which would lead me to understand why the patient should have suffered in this way. Personally I have so far failed to see any distinction between such a heart and the numerous examples of aortic disease which have proved fatal and in which, though anginal pain may have preceded the final stage of failure, there had never been any series of attacks in the least comparable to those seen in the group now under consideration.

It is not difficult to understand the functional element in these patients. The steps in the development are quite clear. The first event is some weakening of an already damaged heart by a recrudescence of rheumatism. In one case, for example, rheumatic pains and arthritis were noted, in another an attack of pericarditis. Then there develops an anginal attack, and as the attacks become more frequent mental alarm and loss of fortitude follow. The mere warning of cardiac uneasiness so upsets these patients that eventually they offer no resistance to the march of an attack, and it is quite conceivable that they may even occasionally simulate one to obtain sympathy. In addition we have to remember the instability of the nervous system in the strongly rheumatic and their tendency to neuritic pains. The following are examples.

CASE 4.—The patient, aged 36, suffered a severe attack of rheumatic fever in May, 1906, four years before he came under my observation. This illness lasted 20 weeks, and he returned to his work before his strength had been thoroughly established. A few weeks later he began to suffer from præcordial pain when walking uphill, and later when going along the flat. During the last four years these attacks had been getting more frequent, and were especially noted after meals. His occupation, though calling for a good deal of walking exercise, did not entail any heavy physical exertion. When he came under observation the attacks were very frequent, sometimes two or three in 24 hours, and they often occurred at night. There was a sense of severe pressure in the chest and pain down the left arm to the wrist, with a feeling of grave alarm, and in the worst attacks of approaching death. He was a thin, highly nervous man, with a large hypertrophied heart and both mitral and aortic regurgitation. With rest he improved in the hospital, and the attacks became fewer and much less severe. The chief features of the observed attacks were acceleration of the pulse with much alarm and great complaint of præcordial pain. He would wake at night groaning and restless, terrified by his cardiac sensation and sweating profusely.

The stomach was considerably dilated and there was much flatulence at the times of the attacks. On many occasions he complained when no signs except quickening of the pulse-rate was apparent. He was under my observation all the rest of the year, and remained considerably better, though he invariably complained of attacks on any exertion or at night.

In 1907 the patient was again admitted, but this time, in spite of the obvious organic lesions, the general feeling expressed was that the attacks themselves were largely nervous, if not sometimes imaginary, and that they were hardly explained by the lesions which from the physical signs were apparently compensated. Later, in March, 1907, he again came to me in great alarm for increasing frequency and severity of the pain, declaring that at night he repeatedly felt that he would die. At intervals for some months he had complained of fleeting rheumatic pains in his muscles, and although no obvious change was detected in his cardiac condition I felt that he was distinctly worse, and that he was also much more nervous. Admission was promised him at the next opportunity, but six days later he was found dead in bed. An inquest was held and death was ascribed to aortic regurgitation. During the twelve months he was under my observation it would be difficult to say how many paroxysmal attacks, severe or slight, this man had suffered, and impossible to decide how many of the attacks were genuine ones. The impression left upon me, however, is that they were probably all genuine and that the extreme nervousness was in part due to them and in part due to his very rheumatic constitution. Whether there was some disorder of the mechanism of the rhythm of the cardiac systole with the expansion of the aorta, or whether coronary spasm or cardiac cramp or neuralgia or neuritis, I cannot pretend to decide. There was no syphilitic or alcoholic history.

The next case will be described in more detail because there was much more opportunity for watching the development of its features. The necropsy was undertaken with a view to throwing light upon its explanation, and the example is a classical one of the condition with which I am concerned here.

CASE 5.—The patient, aged 17, was admitted to hospital on Sept. 5th, 1912, for heart disease and acute rheumatism. At 8 years of age she had had an attack of scarlet fever and at 10 years an attack of rheumatic fever which was evidently very severe and had damaged the heart, for she was ill for a year. Since that time she had been breathless on exertion and subject to palpitation, but there had not been any attacks of pain. Her recent illness had commenced two weeks before admission with arthritic pains and increasing shortness of breath. She was a well-developed girl and emotional in disposition. Her heart was greatly enlarged and there were both aortic and mitral regurgitation. Later she developed general and severe pericarditis which for a while threatened life, but gradually subsided. This acute attack lasted from Sept. 5th to Oct. 2nd when the temperature reached the normal line and practically remained there until she left hospital on Feb. 8th, 1913.

On Oct. 16th, 1912 (14 days after the temperature fell) the patient had first complained of acute pain over the heart during the night, and for nine days in succession these attacks occurred once daily and sometimes three times in the 24 hours. The pain was shooting in character and ran down the left arm in the more severe attacks; in addition gripping sensations were referred to the heart itself. The pulse, always about 100, would run up to 130, and become perceptibly smaller in volume during an attack. After an interval of three weeks of freedom another severe attack took her in the night. She started up complaining of sharp præcordial pain, threw her head back and arched her back, becoming apparently unconscious and stiff. The breathing was slow. There was a short inspiration, then a long silent expiration, then a considerable interval. The attack lasted half an hour, was immediately followed by sleep, and she woke up next morning apparently in her usual state. These attacks recurred with varying severity through November and December, but in January, 1913, disappeared again, and she finally left the hospital after five months' illness, free from pain but with a very damaged heart.

The patient was readmitted on June 6th, 1913, for recurrence of the pain. The freedom from attacks had lasted for nearly three months, but 14 days before entering the hospital they had recommenced. This time there was no fever and no acute illness. The large heart had produced præcordial bulging, and the signs of aortic and mitral regurgitation were evident. The attacks were severe and only relieved by morphia and hot fomentations. They occurred frequently in June, then lessened for a fortnight, but on July 7th there was a severe one, and three occurred in the night of July 27th. During this stay in the hospital those who were watching the patient found that the functional element was becoming predominant, and that slight emotional disturbance would aggravate the condition. On August 11th a severe attack was minutely observed and was of the following nature. The patient was lying on her back, with her left hand pressed over her heart and her right on her forehead, breathing loudly and with labour and groaning. Her face and neck and chest were flushed, her back arched, and her eyes wide open and her mouth closed. There was the same short inspiration and long expiration and pause that were noticed in the previous attacks. The veins in the neck pulsated visibly, and the pulse-rate was 130 to the minute but varied in rate. Two estimations of the blood pressure recorded 202 and 198 mm. Hg. During the attacks, which lasted 15 minutes, she did not appear to recognise anyone. It was shortly followed by another attack less severe and prolonged. Afterwards she complained of a dull aching pain over the præcordium and a sensation in the heart of a lump running together and then separating. The opinion was formed that much of this was hysterical, and firm treatment was adopted and a screen placed round the bed. As a result a hysterical attack developed, with struggling and screaming, but after this the anginal attacks disappeared and she shortly afterwards left the hospital. On Nov. 28th the patient was readmitted for her cardiac symptoms, but had only suffered from one of these attacks since August, and she left again on Dec. 30th. Two attacks of a similar nature occurred in this interval.

March 16th, 1914: The patient was readmitted with a history of renewed attacks, and on this occasion, displeased at some alteration in the arrangements she had expected, developed an acute and fatal seizure, dying 20 minutes after her admission.

The necropsy showed a very large heart (27 oz.); the pericardium was generally adherent. There was myocardial fibrosis with endocardial thickening of the membrana septi, and old-standing thickening of the aortic and mitral valves. The aorta, the openings of the coronary vessels, and the coronary vessels themselves were not apparently diseased. An electrocardiogram taken at a time when the attacks were frequent only demonstrated that there was hypertrophy of the left ventricle. Irregularities of rhythm were conspicuous by their absence throughout.

In this case we have illustrated exceedingly clearly the usual course of these cases: the damaged heart made worse by an acute rheumatic attack; then the development of attacks of cardiac pain, becoming at times very frequent; the steady increase in the predominance of symptoms of a functional or "hysterical" character; the remarkable intervals of freedom; and the final abrupt termination of the illness.

CASE 6.—This case is briefly alluded to as illustrating the onset of these symptoms in a young adult male, aged 23 years, who had had a severe attack of rheumatic fever at 19 years of age and since then had been short of breath. He was admitted to hospital on Oct. 20th, 1913, with arthritis, lumbago, and irregular fever. The heart was severely damaged, and there were both aortic and mitral regurgitation, with the aortic lesion predominant. All the time the temperature was raised he complained of præcordial pain and pain shooting through to the back, but in addition he developed frequent attacks at night, in which he woke up groaning and restless, with sharp gripping cardiac pain, and complained of his heart thumping. The condition closely resembled the attacks in the preceding case, and once again as he remained longer under observation the opinion was formed that these attacks were largely functional and emotional. He left the hospital in January, 1914, during a period of freedom, and his further history has not been traced.

Why these cases should develop these frequent spasmodic attacks I confess is to me very puzzling. It may be that they are not comparable to the various groups previously mentioned, but they form a very interesting study when put side by side with them. It is clear that we are not dealing with symptoms due to a heart failing from a severe aortic lesion, for they may live for some years with intervals of comparative quietude, and the aortic lesion, though obvious, need not be extreme.

Over-exertion will certainly initiate attacks as also active rheumatism, but emotional disturbance would seem almost the most important factor. In no cases of heart disease is mental serenity of more importance, and in none do we need to strike more accurately the mean between overmuch sympathy and too little regard for the sufferings of the patient. The most constant physical sign I have observed is sudden acceleration of the pulse, but a rise in the arterial pressure and contraction of peripheral arteries may certainly occur also.

It is clear from the cases quoted in this paper that there is a complete resemblance between the phenomena described by Llewellyn, Macalister, and others as occurring in arthritis deformans and those which may be met with in the rheumatic. In arthritis deformans many of the symptoms may occur, not only during the course of the developed disease, but also in the premonitory stages when they may be of important diagnostic significance. A more extended study of these symptoms in the rheumatic may also help to throw light upon the earlier stages of the disease and possibly help us towards the goal at which we must all aim—the prevention, as far as humanly possible, of a malady which is the chief cause of organic heart disease.

The symptoms are in themselves very interesting ones, because any poisons that have such an action upon the nerves and blood-vessels as they would appear to possess would have also in all probability some place in the production of more chronic nervous and vascular affections; they may then eventually assist us towards the solution of some part of the problem of arterio-sclerosis and chronic hypertension. Those who have supervised rheumatic children for any number of years must have been struck with the complete inadequacy of any such terms as rheumatic fever or acute rheumatism or with the view that an acute outbreak after the initial attack is necessarily the result of a fresh infection. The conviction is forced upon one that the disease in the severe cases lurks long in the tissues, and though for a while perhaps quiescent is continually showing itself by more or less definite symptoms over months and sometimes years—a view supported, too, by our general knowledge of streptococcal infections.

What permanent effects, apart from the well-recognised lesions, such an obstinate infection as this may produce in tissues which perhaps we have not considered is one of the problems we have to reckon with. Closely associated with this, too, will be the study of the life-history of cases of obstinate rheumatism in children who, conquering the grosser lesions, live to grow up. Do they in later years tend to develop diseases which now perhaps we look upon as entities in themselves, but which in reality are the result of one of the most baffling of all studies—chronic bacterial infection? Lastly, when we think over these vaso-motor and other paroxysmal symptoms in arthritis deformans and rheumatism we cannot help being reminded of the fact that writers upon gout have also laid much stress upon a like instability in those suffering from the more chronic forms of that affection. We are, in fact, upon a well-worn road which the French writers have long traversed in their writings upon spasmophilia. Is this spasmophilic tendency, however, a constitutional diathesis, and not rather an outcome of acquired infection? is a very important question, and one which, it is to be hoped, will be answered in the future. The possible influence of disturbed internal secretions—for example, thyroid disorder—has been repeatedly commented upon. Positive evidence upon this point has not resulted from my own observations, and in this paper I have only ventured upon the much humbler undertaking of once more calling attention to these symptoms as affording some further means of forwarding the prevention of rheumatism.

Devonshire-place, W.

AMPUTATION BY PLANE CIRCULAR SECTION.

BY G. A. WRIGHT, F.R.C.S. ENG.,
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IT appears that this method of removing a limb has been sanctioned by authority in certain cases of "gas gangrene." The arguments in favour of cutting through a limb by a straight plane section of everything, including the bone, appear to be: (1) That the wound is quite open and there are no recesses in which poisonous matter can collect; and (2) that where there is great prostration this is the quickest and easiest way of severing the part. To the obvious objection that the bone is left uncovered and protruding the answer is given that the operation is only meant to meet an immediate risk, and that everything can be put right by a secondary amputation under more favourable conditions.

The state of the stumps in the cases admitted to hospital since May, 1915, has driven us to consider whether it is desirable that this procedure should be continued. The stumps show a large area, sometimes several square inches, of granulating surface, with bone exposed and protruding more or less beyond the level of the soft parts. Though the granulating area heals over in time, and the size of the wound is much lessened by contraction, there is a great delay in healing and the process is either incomplete or, at best, a large thin cicatrix results. In considering these cases it is found that the practice has not by any means been limited to cases of spreading gangrene of the virulent emphysematous kind (gas gangrene). It has been employed in cases of secondary hæmorrhage, in septic arthritis, in patients whose limbs have been shattered, and in gangrene of the ordinary type, following ligature of a main artery. The proceeding has not been limited to the conditions for which it was introduced.

The main objections to this return to the methods of antiquity are:—

1. If the wound can be got to heal at all, without further operation, it takes many weeks, or even months, to do so.

2. If the wound heals a large adherent scar is left with the bone pressing against it. Such cicatrix is prone to all the diseases immediate and remote to which scars are liable, such as ulceration, pain, &c.

3. If, on the other hand, a further operation is proposed, as was originally intended, we find that after all they have gone through the men are naturally not always ready to submit to another operation. When a further operation is agreed to, it is not always easy to decide upon the best procedure, or always possible to get a good result. If the less severe process of clearing an inch or two of the bone and sawing it off is adopted the process of healing is still slow and the cicatrix is not by any means always satisfactory.

4. If a more formal re-amputation is performed in the thigh or upper arm the result means often a serious addition to the difficulties of fitting an artificial limb, and may make it almost impossible to give the patient useful mobility in the stump and control over the appliance provided.

5. Additional troubles arise in some instances. In one of our patients the section was made low down in the leg, leaving a long stump which is exceedingly awkward as it is. Re-amputation at the "seat of election" would, no doubt, give a good result, but in this instance further operation is declined. In another man amputation has been done in both legs, but so close to the knee that kneeling stumps are impossible, and probably re-amputation through both thighs will be ultimately required.

Unless there are really some other great advantages to balance the disadvantages, ease and speed alone are not sufficient recommendations. As regards a free outlet for discharge, either a flap operation or oblique section—i.e., the "elliptical incision" ("oblique circular of Hardie")—provides quite as free vent if the wound is kept open till danger is past. If desired, it would be easy to fasten back the flaps and fix them open for a time, and then bring them together when it was safe to do so.

THE RADICAL TREATMENT OF SEPTIC COMPOUND FRACTURES.

BY VERNON PENNELL, M.A., M.R.C.S., L.R.C.P. LOND.,
FELLOW OF PEMBROKE COLLEGE, CAMBRIDGE; TEMPORARY LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

COMPOUND fractures are on the whole relatively uncommon in civil practice. Since the advent of the present war, however, they have become almost as frequent as the simple fracture so commonly attending the out-patient department of our large civil hospitals.

The prevailing opinion on their treatment to date has been one of "Render the wound free from sepsis, place the fragments in as good a position as possible on an external splint—and wait." That is, first clean the wound, let it heal—with the fragments almost always in a poor position, in which position callus is formed and union commenced. Afterwards—months afterwards often—more radical treatment may be contemplated, generally when the muscles have undergone much shortening and a bone-lengthening operation is almost useless, if possible at all.

For some time it has been held inadvisable to attempt anything in the nature of plating a compound fracture in civil life until the wounds have healed, and much more has this been condemned when any suppuration is present. The reputed reasons for this, I believe, are:—

(*a*) The danger of opening up new channels of infection.

(*b*) If sepsis takes place a foreign body of the nature of a plate will tend to keep up a discharge and will eventually have to be removed, no union having taken place and two operations having been performed.

(*c*) Callus formation and union will not take place when sepsis is present.

(*d*) A septic foreign body is not tolerated by the tissues.

This reasoning does not seem to me entirely sound for the following considerations:—

(*a*) There is little or no danger of opening up new channels of infection.

(*b*) Two operations, where the plate is inserted and removed, are better than numerous anæsthetics for the "putting up" of fractures on various external splints.

(*c*) Union does often take place before sepsis has cleared up, generally with the bones in bad position.

(*d*) Much septic shrapnel has been embedded in the human body since the war began, and has neither been extruded nor extracted, the wounds having healed entirely under active antiseptic treatment, proving the tolerance of a septic foreign body.

Since the commencement of the war I have had the opportunity of seeing fractures in all conditions, from the front, in Clearing, Base, and Territorial hospitals, and have been struck by the rather invertebrate treatment meted out to them, whilst sister wounds of the soft parts receive such very adequate radical treatment. In several cases I have seen a large incision made over the site of the fracture for the purpose of evacuating pus and providing efficient drainage, yet the bone fragments have been left severely *in statu quo ante operationem*.

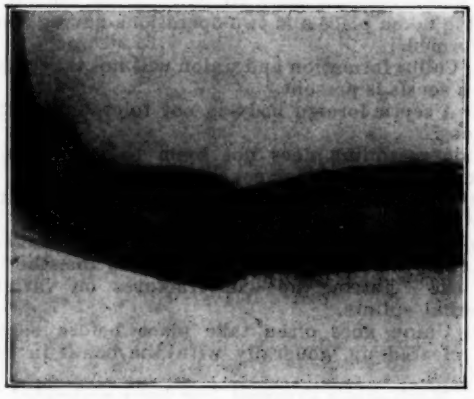
It was the unsatisfactory condition of so many old compound fractures—with union—which I have seen in England that encouraged me to embark on a rather more radical treatment of these cases. I am now strongly of opinion that some means of internal splinting should be carried out in all compound fractures where: (*a*) An incision is needed for ample drainage and efficient cleansing; (*b*) where skiagraphy shows malposition with conservative treatment.

I have seen fractures as early as two hours, and as late as four months, after infliction, and the difficulty of providing a good functional limb in the later cases has convinced me of the necessity of radical treatment being undertaken as early as possible. I have operated on a fair number of compound fractures now, but have only been able to follow up those cases which have been under my care at Reading, and in no case have I had cause to regret the rather radical treatment of open reduction.

The method of treatment I adopt is to make a large incision over the site of the fracture, define the ends of bone, remove any small detached portions of bone and shrapnel, and after placing the two or more main fragments in position, either fix them with a Lane's plate, suture them with silkworm gut, or, as in one case I had in France where there was much loss of bone, transpose a graft from the tibia or fibula.

If the condition is fairly clean I sew up the muscle and fasciæ, leaving only a small rubber drain down to the plate. If it is very septic I make no attempt to "bury" the plate or fixing apparatus. Active antiseptic treatment is, of course, called for. Even if there is much pus, callus is

FIG. 1.



Case 1. Comminuted compound fracture of right radius and transverse fracture of ulna.

FIG. 2.

Case 1 after plating.

rapidly thrown out from the bone fragments in position. Pus even seems on occasion to stimulate this condition, just as in septic wounds of the soft tissues exuberant masses of granulation are commonly seen round a sinus, which pout and sprout uncontrolled by frequent applications of $AgNO_3$.

Callus is quickly formed (three to four weeks in my series) and, even if a troublesome sinus persists which necessitates the removal of the plate, the bone will be found to have acquired sufficient supporting callus to retain it in its (plated) position. So far I have not had to remove a single plate. The results are most gratifying, the most striking point being an almost complete absence of pain during the dressings.

I append a few cases illustrative of the above conditions:—

CASE 1.—Corporal; badly comminuted compound fracture of right radius with transverse fracture of ulna. (Fig. 1.) Operation ten days after infliction. The radius was defined and found to be in six fragments. The upper and lower main fragments were united by a long (femur) plate. The intervening pieces were united by silkworm-gut stitches and "lashed" to the plate. (Fig. 2.) Profuse suppuration in two days' time necessitated removal of all the stitches. Union of the radius took place in five weeks, but the ulna remained ununited for two weeks more.

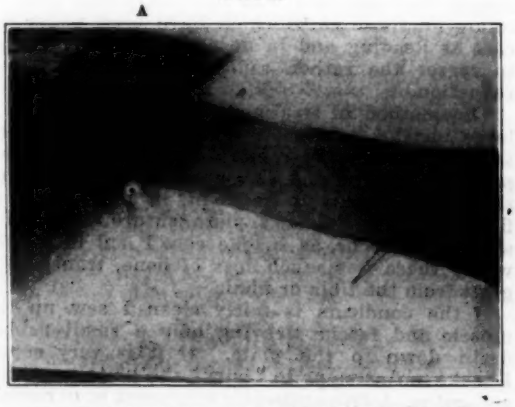
The patient can now use this arm well; he can unlock a stiff lock and open and shut doors. Flexion and extension of the elbow are not affected; pronation and supination are almost as good as before the wound. For a long time the soft parts, though clean, would not unite, but scarlet red ointment of Parke, Davis, and Co. rapidly cleared up this condition of inertia.

CASE 2.—Private; badly septic comminuted fracture of right mandible about the angle; complete separation of fragments and mouth fixed open. Operation five days after infliction. The angle and horizontal process were exposed by an incision along the lower border. The three posterior teeth were extracted and small fragments of shrapnel and bone were removed. The two main fragments were manipulated into position and a short three-screw plate applied. A mouth-wash of H_2O_2 was irrigated from the mouth through the original wound to the exterior for two days, when the wound in the mucous membrane healed. The incision healed in ten days. Good union now and movements fair; improving; much callus formation.

CASE 3.—Private; compound comminuted fracture of right radius just below pronator radii teres insertion; position not good. No union after three weeks in France. Still very septic and painful, with 1 inch gap between the fragments. Opened up on admission to Reading. Pus was evacuated, and the ends of the bone were sewn in position with silkworm-gut through holes drilled in the ends of the bones. Cleaned up rapidly with complete absence of pain. Callus was seen skiagraphically after ten days. There is union now, but the wound is not quite healed.

CASE 4.—Private; admitted with fractured femur in bad position (Fig. 3); 3 inches of shortening. There was a laterally

FIG. 3.



Case 4. Fractured femur. A, flake of bone accidentally detached.

FIG. 4.

Case 4. Plates on inner surface of femur and in medullary cavity.

coursing septic bullet wound from the outer to the inner side of the thigh 7 inches above the knee-joint. Operation five weeks after infliction. A median anterior incision 8 inches in length was made. The bone was defined, and three fragments, after much difficulty owing to rigidity of the muscles, were manipulated into place. The middle flake accidentally was now detached in moving a retractor and fell on the floor. Two short plates were then placed on (1) the inner side of the shaft of the femur; and (2) the outer aspect of the inner side of the compact bone of femoral shaft—i.e., in the medullary cavity. (Fig. 4.) The incision healed *per primam*, but the bullet track still discharges, a sinus 8 inches long still being present after six weeks.

There is good union with much callus. The plates in this case may yet need removal, but in the last few days the sinus has become somewhat smaller, and I shall continue conservative treatment for 14 days more before removal of the plates, if then necessary. The position is as good as before the fracture.

CASE 5.—Private; comminuted fracture of lower third of tibia. The fracture was exposed and the fragments were sewn in position with silkworm gut. Union took place in four weeks in perfect position.

CASE 6.—Private; Alpine Chasseurs; 6 inches blown away from the middle of the shaft of the femur by a bullet at short range. Six weeks after infliction, the wounds being fairly clean, 8 inches of the fibula were resected from the same leg and placed in the gap by forcing it into the medullary cavity of the upper and lower fragments. A good deal of suppuration took place after the operation, but the fibular fragment was not extruded. Eventually the wounds healed and there was 2 inches' shortening of that limb. The patient was discharged from hospital in plaster-of-Paris. I was quite unable to follow this case after he had been sent to his (French) depôt.

Conclusions.—1. Time is saved by the above method if early fixation of bone is undertaken, one or at the most two operations are necessary, and union generally takes place as in a simple fracture, though somewhat delayed by open wounds. 2. Almost complete absence of pain. 3. Callus formation in spite of suppuration; in some cases it even seems to be stimulated to exuberance by it. 4. Foreign bodies—i.e., plates and shrapnel—even when septic, can be rendered sterile and tolerated by the tissues. 5. Position is almost as good as a simple fracture treated by plating. 6. Where a large wound in the soft parts is necessary for cleaning and drainage, rationally the bone fragments should be manipulated into position. 7. Dressing is facilitated by a "fixed" fracture, even if this fixation be but partial. 8. Function is better than by other methods.

My thanks are due to Lieutenant-Colonel Maurice, R.A.M.C. (T.F.), for valuable advice and permission to deal with the above cases (except Case 6), and to Captain Foster, R.A.M.C. (T.F.), for the originals of the radiographs.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE.—The following elections to scholarships have been made:—Bucknill scholarship (135 guineas), J. P. Padshah. Medical entrance exhibitions (55 guineas each), H. L. Heimann and A. B. Saunders. Epsom free medical scholarship, D. C. Corry.

MEMORIAL TO THE LATE MR. EDGAR JOHN DONBAVAND, L.R.C.P., M.R.C.S.—A stained-glass window, erected to the memory of the late Mr. E. J. Donbavand, was unveiled last week at Arlesey Church, Bedfordshire. The window is a good specimen of fourteenth century style and contains a representation of St. Luke as the central piece. Mr. Donbavand, who died at Plymstock (Devon) in 1914, was formerly in practice at Arlesey.

INTESTINAL DRAINAGE IN SEPTIC PERITONITIS.

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THE examination after death of a large series of cases of septic peritonitis reveals two fairly distinct pathological types: (1) that in which there is abundance of fluid free in the abdomen but little actual peritonitis; and (2) that in which there is little or no free fluid but extensive peritonitis. In conformity with custom the term "septic peritonitis" is here employed to refer to either type, but it is to be clearly understood that this expression must be regarded as clinical and provisional rather than as the name of a definite pathological entity sufficient in itself to account for death. Although pathologically the two types differ so markedly, they agree in having intestinal paralysis as a great clinical feature. In the one type this apparently results from infective inflammation of the intestinal peritoneum; in the other it seems to be due to toxic fluid free in the abdomen acting on the intestinal nerves, and inhibiting peristalsis. Be the explanation of the acute stasis what it may, the deterioration and death of the patient is unquestionably due—in many cases largely, and in others almost entirely—to resulting intestinal toxæmia. The rational treatment of this toxæmia is the removal of unabsorbed intestinal toxin and the prevention of its further production. Both these ends may be secured by intestinal drainage—provided that the peritoneal cavity is not charged with excessive poison and that the focal factor is eliminated.

As all the cases described in this article followed on abdominal operations, it will be well to indicate the main points in the diagnosis of post-operative septic peritonitis. Progressive deterioration is the great outstanding feature, the downward process usually beginning 12 to 24 hours after operation. The patient rapidly loses strength, and finally looks so very ill as to suggest the work of some virulent poison. Both pulse and respiration rate quickly reach a high grade, while the blood pressure markedly falls. Abdominal pain is not a constant symptom, the patient perhaps making no complaint whatever, merely being very restless. When the pain is due to actual inflammation there is coincident marked tenderness to pressure, while when due to distension it is liable to be more colicky. Although, as a rule, the abdomen is distended, this sign may be absent, and some of the worst cases of septic peritonitis may show a scaphoid abdomen. Abdominal movement is diminished or practically lost. Vomiting is in the majority of instances a striking feature and may actually become fæcal, but in some cases it is comparatively slight, the diagnosis then depending on the rapid general deterioration. When the deterioration is fully established the passage of gas and fæces usually ceases, although enemata may bring away both fæces and flatus. In other instances there may be actual diarrhœa. Here, again, the diagnosis hinges largely on the rapid general deterioration.

In the Perth Hospital, Australia, my last six cases of post-operative septic peritonitis have been treated by intestinal drainage, and all the cases have recovered, a result which I am convinced could not have been achieved by any other known

method of treatment. To make my attitude more clear, the following summary of the treatment may be stated. 1. If the focal factor has been eliminated, free toxic fluid mopped away, septic necrotic areas drained, the Fowler position employed, saline freely administered, and early purgation given a trial, but the patient nevertheless continues to deteriorate from toxæmia due to paralytic ileus, then intestinal drainage should be instituted. 2. If, at the primary operation, drainage of the septic focus in the abdomen has not been employed and the patient deteriorates, a drainage-tube may now be introduced; if the patient does not then rapidly improve, but continues to go down hill, intestinal drainage may now be instituted under local anæsthesia. 3. If, when the case is first seen, the evidence of toxæmia from paralytic ileus is positive, and especially if lividity is obvious, then intestinal drainage should form part of the primary operation.

CASE 1. *Appendicectomy; localised (?) intestinal paralysis; cæcostomy.*—A multipara, aged 38 years. Operation on May 29th, 1912: Curettage, excision of cyst of right ovary, looping left ovarian ligament, hysteropexy, and appendicectomy for subacute appendicitis, the appendix being removed by my assistant. Next day there was marked pain and tenderness over the cæcum and ascending colon. The following day the patient was collapsed (temperature 97° F., pulse 140), but refused operation till a week later, when, after slight improvement from the collapse, her condition had become very grave, the symptoms (severe pain and tenderness, slight vomiting, fluctuating temperature, pulse 120 to 140, but fæces and flatus passing) gradually becoming worse. She had a bad colour, and looked very ill and depressed.

On June 7th through an oblique incision the cæcum and colon were found to be adherent to the abdominal wall, and intensely inflamed, thick, stiff, and friable. A rubber tube was purse-strung into the cæcum. The patient thence onward slowly improved. At the end of a week, on giving an enema, the fluid came out not only through the cæcostomy opening, but also through a sinus which had formed in the lower end of the suprapubic incision. Both openings closed in a few weeks. In this case there had apparently been some fault in the technique of removal of the appendix, leading fortunately to only a localised peritonitis.

CASE 2. *Paralytic ileus with free diarrhœa and definite peritonitis; enterostomy.*—A multipara, aged 39 years. Operation on March 5th, 1913: Curettage, salpingectomy and appendicectomy (rather recent salpingitis and appendicitis), hysteropexy. A small hard lump at the uterine end of the right round ligament was found to contain about half a drachm of yellowish pus, the cavity being cleansed and swabbed out with pure carbolic and alcohol.

A few days later an oblique incision was made over the cæcum and pus was found to well up from the locality of the uterus; a rubber drainage-tube was inserted. On March 11th the report was that the patient had been rather drowsy and indifferent since the second operation, while free diarrhœa had continued. She now looked markedly drawn and weary, her colour was very bad, the tongue was dry and coated, the temperature was 102° F., the pulse-rate 140, and respirations 40. Abdominal distension had progressively increased, and was now so pronounced as to suggest that the intestine might possibly burst. It seemed obvious that unless relief was promptly given the patient must die. Enterostomy was at once carried out through the upper end of the suprapubic incision, and proved trying on account of the wound being infiltrated with pus and all the tissues markedly friable. There was obvious peritonitis up to and past the upper end of the wound (which reached the umbilicus), blood-stained fluid being present in the abdomen, the small intestines presenting purplish, and the coils so adherent that the selected one had to be broken away to bring it up to the wound. The parietal peritoneum was so friable that sutures tore out, and I had to be content to stitch the bowel to the subcutaneous fat. A rubber tube was fixed into the bowel. The blood-stained fluid in the abdomen was only roughly mopped up. In a couple of days the abnormally distended abdomen had become flat, but later, when the enterostomy tube came away, the fæces escaping on to the skin caused much misery. In about six weeks the patient was discharged with all wounds healed.

CASE 3. *Salpingectomy; paralytic ileus; secondary vaginal drainage and cæcostomy.*—A woman, aged 22 years, was admitted with a three months criminal abortion, and the uterus was promptly cleared out. The patient deteriorated, and a couple of days later the pulse was 135 and the respirations 36. She looked pale and distressed, and the tongue was drying.

On March 11th, 1913, operation revealed free blood-stained fluid filling and extending up from the pelvis. After breaking down adhesions, a right tubo-ovarian abscess containing horribly foul pus was found. When this had been dealt with the patient's condition was very grave, so that I rapidly closed the abdomen. During the next few days the patient was obviously deteriorating, the face being pale and drawn, and the lips and ears darkening, while the pulse was very poor and quick. The bowels were acting with purges and enemata, and there was only slight vomiting. On the 18th the abdomen was greatly distended and immobile, while there were marked tenderness and thickening in Douglas's pouch, and the patient complained greatly of pelvic pain. There was swelling of the vulva, a sign noted in the preceding case. Cæcostomy was carried out; the cæcum was healthy and turbid free fluid was mopped out from the pelvis through the oblique abdominal incision. Douglas's pouch was then opened through the vagina and gave exit to stinking, thin sero-pus. The patient did well, the distension and other symptoms rapidly improving.

CASE 4. *Paralytic ileus; secondary abdominal drainage and cæcostomy (an unrehearsed clinical experiment).*—A multipara, aged 35 years. Operation July 22nd, 1914: Densely and extensively adherent pus sacs were excised, the stump of the left broad ligament being so friable that ligatures cut through as if it were cheese; inflamed appendix removed. The patient progressively deteriorated, and about 48 hours after operation was in a very grave state. She looked drawn and anxious, her colour was bad, the tongue was dry, there was much abdominal pain, vomiting was almost continuous, the abdomen was enormously distended, the hands were cold and clammy, and the pulse was a mere thread. The temperature was 97° F., the pulse-rate 140, and the respirations 40, and in every way the case looked very hopeless.

On opening the abdomen over the cæcum a good deal of watery blood-stained fluid appeared, and was fairly well mopped out. A rubber tube was fixed in the cæcum. The lower end of the median abdominal wound was next opened, and a good deal of blood-stained fluid mopped out of the pelvis, a rubber tube being then inserted. When seen about two hours later the patient had become delirious, and so obstreperous that it had been found necessary to restrain her. I discovered that the cæcostomy tube had been blocked. This was remedied, and the improvement thence onward until next day was so consistent that I felt satisfied that the preliminary failure of the cæcostomy tube had permitted toxin to remain in the bowel and set up delirium. This course of events also suggested the likely progress of the case to a fatal ending if cæcostomy had not been carried out. Improvement was rapid, and two and a half days after the operation the patient was reading the newspaper.

CASE 5. *Salpingectomy; paralytic ileus; cæcostomy.*—A multipara, aged 33 years, was admitted with double pyosalpinx, some ounces of foul pus having been passed per rectum a few days earlier.

Operation (July 29th, 1914) revealed a very densely and extensively adherent left tubo-ovarian abscess, containing about 10 ounces of horribly fœtid pus. After salpingo-oöphorectomy a large dirty necrotic surface was left behind the broad ligament and uterus. A medium-sized right pyosalpinx was also removed. A rubber tube was passed down to Douglas's pouch. Shock was so profound that it was impossible to place the patient in the Fowler position until the next day, when she complained much of "sinking through the bed." Thence onward she deteriorated, and by noon of July 31st it was apparent that a great change for the worse had taken place. The patient looked critically ill; the face was pale, the lips were livid, and the nose was pinched;

the pulse-rate was 144, the respirations 44, and the temperature 96° F.; the abdomen was considerably distended, but vomiting was not urgent.

Without altering the position of the patient in bed, and under local anæsthesia, an oblique incision was made over the cæcum, saline being run into the median basilic during operation. Sero-pus was mopped out of the pelvis, and a rubber tube fixed in the cæcum. The wicking was removed from the median drainage-tube, and a little stinking pus sucked out by a syringe. At the close of the operation dissolution seemed imminent, but in spite of the gloomy outlook the patient rallied, and on the fifth day she was taking fish.

CASE 6. *Ectopic gestation; paralytic ileus with fæcal vomiting; cæcostomy.*—A woman, aged 24 years, was admitted with a history pointing to rupture of an ectopic gestation three weeks earlier. She was very anæmic, the pallor having that "dirty" appearance suggesting sepsis. The pulse-rate was 136, the temperature 99·6° F., and the respirations 28.

At the operation (May 5th, 1915) the abdomen was found to be full of very dark fluid blood and clots. A fœtus, 4½ inches long with well-developed placenta, was removed, and left salpingectomy carried out. In spite of the employment of many swabs and much saline, it was found impossible thoroughly to cleanse the abdomen of clots, and finally, while the washings were still very dark, I was compelled to close the wound on account of the poor condition of the patient. The next day there was a good deal of vomiting and distension. On the following day it was reported that both these symptoms had progressively increased during the preceding night, and that fæcal vomiting had set in. At 8 A.M. on this day 20 ounces of fluid had been brought up at one bout. This fluid had a strikingly fæcal odour, and in every way suggested the bowel contents. Vomiting thence onwards was continuous and profuse, 18 ounces being brought up about noon, when I decided to operate. At this time the patient was in an extremely critical condition, and there seemed very little hope of recovery. The pulse was 160, temperature 96·4°, and respirations 40; the abdomen was immobile and enormously distended, the extremities were cold and tremulous, and the patient looked intensely pale and ill. On opening the abdomen over the cæcum much dark bloody fluid welled out on to the bed. It seemed to me that this fluid represented the last washings left in the abdomen at the primary operation. No attempt was now made thoroughly to get out this fluid from the abdomen, only the easily accessible surplus being mopped away. A rubber tube was purse-strung into the cæcum and connected with a bottle fixed to the side of the bed. As in the preceding cases, the wound in the parietes was closed right up to the tube. After a few hours the vomiting had ceased, and within less than 20 hours there was practically a flat abdomen, while the patient was taking milk and manifesting an interest in her dietary. A couple of days later a right basic pneumonia developed, but otherwise the progress to recovery was not seriously interrupted.

It is to be noted that in Case 6, as in the others, no serious effort was made during cæcostomy to cleanse completely the abdomen of free fluid. This is in conformity with my view that in post-operative septic peritonitis the patient, generally speaking, dies of the bowel rather than of the peritoneum.

The remarkable recoveries in the foregoing cases appear to me to supply fair proof that intestinal drainage must stand as a principle of surpassing value in the treatment of septic peritonitis. The full recognition of the importance of this principle, and its early application would, I believe, save many lives otherwise inevitably sacrificed. It would, of course, be too much to expect that, as in my present series of post-operative cases, there should always be 100 per cent. of successes. But if this treatment, on an extended scale, should achieve anything like such a high proportion of recoveries—as on theoretical and practical grounds I believe it will—then in intestinal drainage will be found the solution of a great surgical problem.

Perth, Australia.

THE SIGNIFICANCE OF PULSUS ALTERNANS AND SOME OTHER FORMS OF UNEVEN PULSE.

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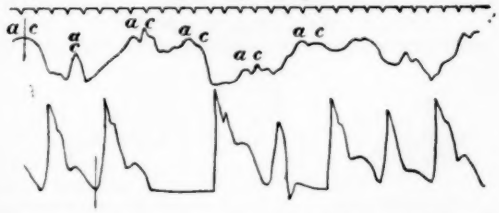
OF recent years it has been taught and generally accepted that the pulsus alternans is a sign of grave omen indicative of impending catastrophe. Notes of a case in which it persisted for several years, however, have been communicated by Dr. C. O. Hawthorne[1] in a recent paper, and judging from the history of some of the cases reported below, it seems that its appearance during convalescence from sickness may be regarded, sometimes, at all events, with equanimity; from which it is to be inferred that either all the data are not yet to hand for distinguishing, with certainty, whether an alternating pulse is in fact a pulsus alternans, or, the pulsus alternans does not necessarily imply so grave a cardiac disorganisation as has been supposed.

The cases now reported are divided into those who complained of cardiac symptoms and who were, in most instances, found to be the subject of heart disease in its clinical aspects; and others who were recovering from a state of toxæmia and for the most part exhibited neither symptoms nor physical signs of cardiac disablement. The patients were of divers ages and of various occupations and positions in life; and there seems to be no condition common to them excepting that they had all been subject to strain of some kind or another. Those patients in whom the symptoms pointed primarily to a cardiac derangement were of a type that is wont to attain success by personal effort, energetic and active in mind and body, upon whom the wear and tear of a long or worrying life imposes a strain that may not be experienced by a more phlegmatic and less industrious brother; whilst in those who were making recovery from an intoxication the strain was of a temporary nature, incapacitating whilst it lasted, but ceasing with the complete elimination of the exciting cause. Of the former all were males, and three of the four are dead, the surviving case having only recently come under observation. Of the latter two of the five are women, and all are living.

FIG. 1 (Case 1).



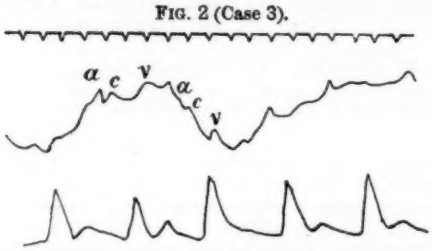
CASE 1.—The patient was an active business man 54 years of age. When he presented himself for advice he complained of breathlessness and præcordial pain; the pulse-rate was perceptibly alternating and murmurs were audible over the mitral and aortic areas. Death ensued 20 months later.

CASE 2.—The patient was a country gentlemen 74 years of age. Whilst on a visit he was seized with angina and subsequently he endured attacks of acute pulmonary œdema,

[1] THE LANCET, May 29th, 1915, p. 1125.

of which an account has already appeared,[2] together with the tracing which was taken by Sir James Mackenzie. Death ensued within two months.

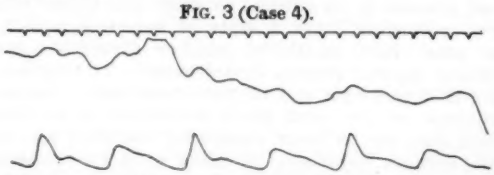
FIG. 2 (Case 3).



CASE 3.—The patient was a hard-working business man. He suffered from bronchitis and asthmatic attacks for two years before marked dilatation set in, from which he died 12 months after the tracing was taken.

In these cases the pulsus alternans was an additional sign occurring in the course of a progressive heart failure; and in two of them its detection was of value in formulating the prognosis. The special train of symptoms to which such patients are particularly liable have been described by Dr. J. D. Windle[3] in his papers upon the subject in which he draws attention to the frequency with which they suffer respiratory disturbances of various kinds.

FIG. 3 (Case 4).



CASE 4.—The patient was a very busy and overwrought city man of neurotic temperament, who made complaint of præcordial discomfort, dyspnœa, and liability to palpitation. The tracing shows the pulsus alternans, but clinically there was no evidence of organic disease. Further, in a tracing taken a fortnight later by Sir James Mackenzie no alternation can be detected. In this case it is suggested that the presence of pulsus alternans with the symptoms of cardiac stress are sufficiently ominous to warrant the warning that work must be curtailed, at least to the extent of avoiding the degree of strain which conduced to his recent symptoms.

I can find no reference in the literature to the appearance of pulsus alternans, unaccompanied by serious symptoms, in persons who are convalescent from febrile or other toxic disturbances. That this may sometimes obtain, however, is demonstrated by the following cases.

FIG. 4 (Case 5, A).

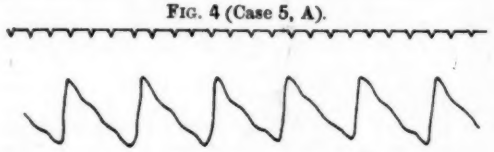
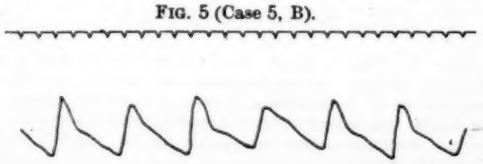


FIG. 5 (Case 5, B).



CASE 5.—The patient was a man 65 years of age, six weeks convalescent from a severe attack of pneumonia. He made some complaint of undue shortness of breath upon exertion, but otherwise felt well. Tracing (A) was taken when the patient had been resting, and tracing (B) was taken after he had been walking for two minutes. Upon inquiry this patient sends word that, though he is in his seventieth year, he is as strong as ever; an exemplary optimist!

FIG. 6 (Case 6, A).

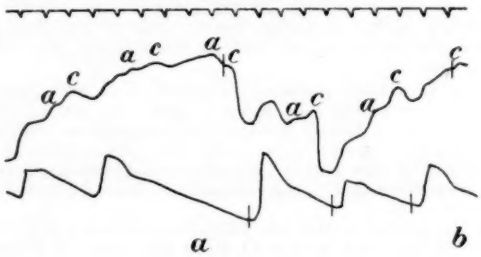
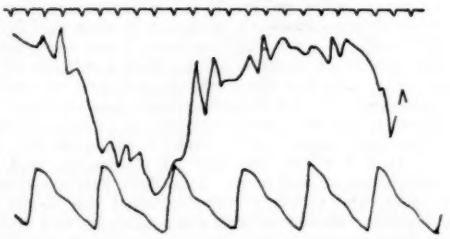
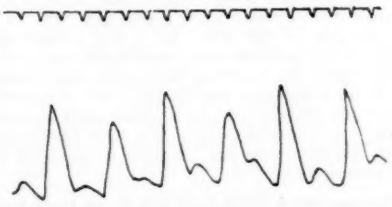


FIG. 7 (Case 6, B).



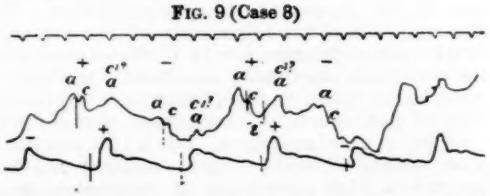
CASE 6.—The patient was a woman, aged 60, in whom an irregular pulse was discovered during convalescence from influenza. She had an enlarged heart, but she made a good recovery 17 months ago and is now strong and well. Pulsus alternans is evident both before and after the extrasystole at (A), being subsequently followed in the complete tracing by a series of normal beats before alternation is again discerned; but in the tracing (B) recently taken the pulse shows neither extrasystole nor alternation.

FIG. 8 (Case 7).



CASE 7.—The patient, a female aged about 42, was two days convalescent from a very short febrile attack. The tracing shows a brief period of alternation, which was induced only by considerable exertion and which endured only for a few beats, being followed by a perfectly normal pulse. This tracing was taken four years ago, and the patient has since been in good health. She is now actively engaged "somewhere in France."

FIG. 9 (Case 8)

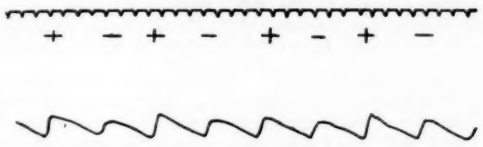


CASE 8.—The patient was a lad, aged 17, recovering from an attack of measles, during which the temperature had risen to 104° F. Subsequently the pulse dropped to 48 per

[2] THE LANCET, May 27th, 1911, p. 1417.
[3] THE LANCET, May 13th, 1911, p. 1260.

minute and the tracing was obtained. It will be seen in the jugular tracing that there is an apparent extrasystole between each of the normal beats that reach the radial and that the small wave in the radial follows upon a longer pause than the large wave. There was no consciousness of cardiac distress. This tracing also was taken four years ago, and the patient is now serving at the front with distinction.

FIG. 10 (Case 9).



CASE 9.—The patient was a perfectly sound and healthy man, from whom a tracing was obtained during recovery from an anæsthetic. More transient phases of an alternating pulse are manifest in earlier portions of the tracing, but in the part from which this tracing is taken it is maintained for a considerable succession of beats. This was obtained at the extreme end of unconsciousness, after the patient had retched. The heart was, clinically, perfectly normal.

The above notes indicate that patients may show the presence of a pulse, indistinguishable from the pulsus alternans, without symptoms and without subsequent cardiac disability. This is no proof that whilst such type of pulse persists the patients are not in jeopardy, or that pulsus alternans is, or may be, of no account, but it denotes a modification in the ultimate prognosis according to the etiological conditions with which it was associated. On the other hand, it is within the experience of all that persons convalescent from acute fevers may, without warning or any apparent reason, succumb with tragic suddenness to an acute cardiac failure; and though it is far too speculative to assume that pulsus alternans has been present in these cases, or that the sphygmograph would sound a warning in any other form, this possibility is suggested by Case X quoted below, and it seems to be a point worthy of further investigation.

FIG. 11 (Case X, A).

FIG. 12 (Case X, B).

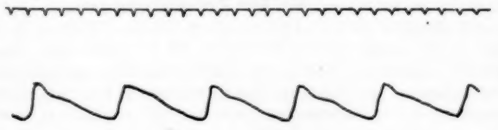
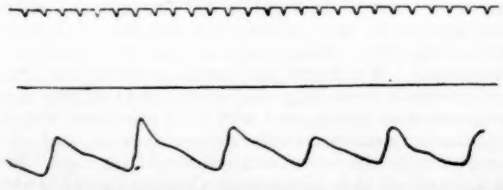
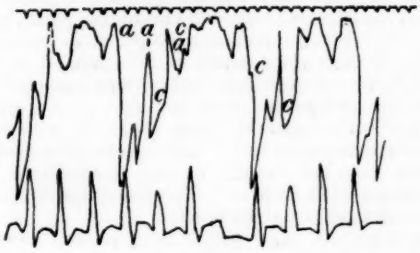


FIG. 13 (Case X, C).



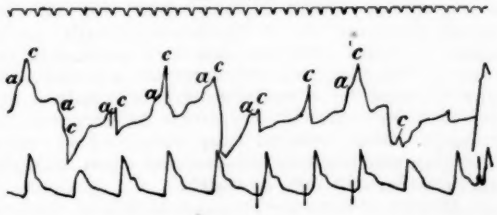
CASE X.—The patient was a woman, aged 40, who suffered from pronounced cardiac weakness following upon a tonsillitis due to staphylococcic infection. (A) is a tracing taken whilst the patient was at rest, and one month after grave attacks of syncope had ceased, to which she had been subject even whilst lying in bed. Owing to the distinct inequality in the value of the pulse wave the patient was not allowed to get up. One week later tracing (B) was taken, the pulse was obviously much steadier, and the patient was allowed to sit up for 20 minutes. Upon her return to bed tracing (C) was immediately taken and in it the unequal pulse values are again manifest. It is to be regretted that for some reason a jugular tracing was not obtained, though the attempt to procure it was repeatedly made. Eventually this patient made a good recovery.

FIG. 14 (Case Y).



In some tracings there occur certain weak beats which may or may not reach the radial pulse. They are not extrasystoles, they occur more or less frequently or infrequently, and present no apparent order or sequence. For example, in Case Y there occur intervals of feeble beats which are sometimes so feeble that they are not recorded in the radial tracing. It will be observed that the beats next but one preceding and next but one following upon the dropped beat are smaller than their neighbours, so that a curious sort of temporary alternation has been set up. This is from the same patient as was the tracing quoted under Case 3, which shows the pulsus alternans, the latter having been taken exactly one month later.

FIG. 15 (Case Z).



In Case Z there were but few of these weak waves and the loss of value in them was not very marked, whilst the remainder of the waves were good and equal. Whether these discrepancies are to be regarded as of any significance I do not know, although this particular patient died from heart failure 12 months later.

I confess that the interpretation of these tracings is, to me, no easy matter, and if more correct views can be given by more expert witnesses I shall receive them with gratitude. Yet, the difficulties notwithstanding, there is no doubt that the use of the sphygmograph promotes a large additional interest in every decrepit heart that comes under observation, thus both directly and indirectly leading to greater accuracy in prognosis, greater confidence in treatment, and a sense of less incomplete achievement which more than amply repay the extra time and trouble involved.

Torquay.

A CASE OF COMPLETE BRANCHIAL FISTULA IN AN ADULT.

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A SERGEANT, aged 32 years, had, three and a half months prior to admission, a compound fracture of the inner end of the right clavicle, caused by a bullet. He then for the first time noticed a discharge of sticky fluid from a point in the skin low down in the right side of the neck.

When admitted it was found that at about an inch above the right sterno-clavicular joint, at the inner edge of the sterno-mastoid, was a minute opening in the skin, from which exuded a clear glairy fluid. A fine lead probe was inserted into the sinus and passed upwards and backwards for 5 inches. The patient stated that the end of the probe irritated his throat. Methylene blue solution injected into the sinus caused immediate blue colouration of the saliva. The pharyngeal opening of the tube could not be seen.

Operation.—A lead probe was passed into the sinus for 5 inches, its end being palpable beneath the mucosa behind the tonsil. A small ellipse of skin, surrounding the opening of the fistula, was freed and ligatured to the end of the probe. Through a skin incision of 4½ inches passing from the mouth of the sinus to beneath the angle of the jaw, the tube, which was well defined with walls one-eighth of an inch in thickness, was dissected intact up to its pharyngeal attachment. The tube ran over the hyoid bone beneath the anterior belly of the digastric muscle, lying on the hyoglossus muscle, the hypoglossal vein, and the hypoglossal nerve. While the tube was still attached only by its pharyngeal end deglutition caused excursion of the tube to the extent of 2 inches. The tube was tied close to the pharynx with a transfixing catgut ligature, and the portion distal to the ligature was removed. The only vessel of any size requiring ligature was the external jugular vein, one inch of which was excised. Large pulsating vessels occupied the deep portion of the wound. The platysma and connective tissue were approximated by a continuous catgut suture and the skin by a continuous linen suture, without drainage. The removed tube measured 4½ inches in length, was lined by mucosa, and when lying flat measured half an inch in width.

Pathological report.—The secretion from the tube contained squamous epithelium, staphylococci, and pus cells. A microscopic section of the tube showed a thick outer layer of longitudinal muscle fibres, a thin middle coat of connective tissue, and a lining of mucosa, folded longitudinally and composed of polyhedral cells.

After-history.—Recovery was uneventful. There is a linear scar over which the patient can shave.

In the adult a branchial sinus, which opens into both the neck and the pharynx, is of some rarity. Authorities differ as to what relation the pharyngeal opening usually bears to the tonsil. In the above case, although the actual stoma could not be demonstrated, the end of the probe was felt behind and not below the tonsil. The demonstration, by injection of methylene blue, of the existence of a pharyngeal opening permitted ligation of the stump without fear of causing a retention cyst, and rendered unnecessary the insertion of the divided end into the pharynx, which has been performed in cases where the existence of a pharyngeal opening could not be proved.

Reviews and Notices of Books.

Oxford Primers on War Surgery.

1. *Wounds in War: Their Treatment and Results.* By Lieutenant-Colonel D'ARCY POWER, R.A.M.C. (T.), Surgeon to, and Lecturer on Surgery at, St. Bartholomew's Hospital. Pp. 108. Price 2*s.* 6*d.* net.
2. *Injuries of Joints.* By Major ROBERT JONES, R.A.M.C. (T.), Director of Military Orthopædic Hospital, Liverpool. Pp. 189. Price 3*s.* 6*d.* net.
3. *Abdominal Injuries.* By Professor RUTHERFORD MORISON, Senior Surgeon to Northumberland War Hospital; and Lieutenant-Colonel W. G. RICHARDSON, R.A.M.C. (T.), 1st Northern General Hospital. Pp. 116. Price 2*s.* 6*d.* net.
4. *Surgery of the Head.* By Major L. BATHE RAWLING, R.A.M.C. (T.), Surgeon and Senior Demonstrator of Operative Surgery, St. Bartholomew's Hospital. Pp. 150. Price 3*s.* 6*d.* net.

London: Henry Frowde and Hodder and Stoughton. 1915.

WE welcome this series of *Primers on War Surgery* issued by the Oxford Medical Publications Committee under the general editorship of Lieutenant-Colonel D'Arcy Power, R.A.M.C. (T.), because they promise to be useful to the numerous medical men who are now being called upon to treat war injuries and their results. The volumes which have been issued in the series are written in a thoroughly practical manner by surgeons who are not only experienced teachers and recognised authorities on the subjects committed to them, but have under their care many wounded in the various military hospitals at home and abroad. It is clear that the primers are intended to be handbooks or manuals, for they are printed in large type in a size convenient for the pocket, and are bound in a waterproof material. We review this week the first four volumes.

The first volume, "Wounds in War," written by the general editor of the surgical primers, forms an introduction to the series and covers the whole subject in a hundred lucid pages. The first three pages are devoted to a striking picture of the influence of the present war on surgery. "The effect ..... has been remarkable. It has thrown us back to the time before Lister, when most wounds suppurated. It has taught us that a part of our boasted advance was useless, for the wounds to be treated were already deeply infected before there was any possibility of treating them. It has been the object of surgery for the last 30 years so to treat wounds that they healed by first intention. ..... It is far otherwise with the present campaign." And Lieutenant-Colonel Power goes on to explain how the high state of cultivation of the ground over which the army has been fighting, the continuous character of the battles, the nearness of the opposing lines, and the enormous number of the fallen men, have produced conditions widely different from those of other recent warfare. "Much, therefore, has been learned during the last few months which was known to the older surgeons but has since been forgotten. Some few things have had to be unlearned. We know, for instance, why our forefathers made such large and deep incisions, why they amputated so freely, and why they preferred simple circular amputations to the more elaborate, and, as it seemed to us, the better method of cutting flaps." But in spite of all this Lieutenant-Colonel Power is able to add: "The experience we have already gained has shown that we are in many respects far ahead of our predecessors. What they did empirically we are now able to give a good reason for. ..... Much has still

to be learnt, for Lister's teaching has not yet been able to abolish suppuration under the unfavourable surgical conditions of war." But on the credit side, too, are the vastly improved conditions of food-supply and sanitation: "Our men, at the present time, are usually in the pink of condition; they are abundantly fed, and they work hard under better sanitary conditions than they have been accustomed to at home. It is no wonder, therefore, that they have remained healthy, that in spite of grave drawbacks their wounds have healed readily, and that they have been able to resist the effects of microbic invasion more readily than the civilian population under like circumstances." The text of the book itself contains a businesslike application of these considerations to the actual conditions of the present war, and is in no way based on the lines of earlier military surgical text-books. The causes of wounds in war are described in Chapter I., and the immediate treatment from the field dressing to the general hospital in Chapters II. to IV. Suppuration and its treatment follows, with a careful paragraph on the indications for amputation. Vaccine therapy has 18 pages allotted to it from the pen of R. L. Mackenzie Wallis, M.A., demonstrator of chemical pathology at St. Bartholomew's Hospital. He points out that "most of the wounds sustained in this war present a complex infection in which six or more distinct species are present," and that "these various types are overcome one by one until the wound is nearly healed, when only one species perhaps remains"—a state of affairs which has its immediate bearing on treatment. The nature of wound infections is described and the methods of detection briefly set out. The results of serum treatment in general "have not been very convincing." No definite opinion is expressed regarding ordinary vaccines, but "in the acute wound infections where streptococci are present" treatment by means of sensitised streptococcal vaccine "has been adopted with most striking results." Chapter VII. deals with the results of wounds, with detailed directions how to tie arteries. "The two bugbears of military surgery"—tetanus and gaseous gangrene—are next dealt with, and in regard to the former "treatment consists in early recognition of the tetanus bacillus at the seat of injury, and this can only be done by a routine examination of the discharge from every wound received on the battlefield as soon as it is possible to obtain expert bacteriological advice"—a statement which should be laid to heart by all concerned in administration. In gaseous gangrene "the infection spreads so rapidly that amputation high up affords the best chance of recovery when a limb is affected." The final chapter deals with amputations, followed by a useful index. No criticism of the matter nor of the manner of this volume has been attempted or is needful; it should either be the vade mecum of every military surgeon or dresser or, better still, be memorised as a firm basis on which to build his own observation and experience.

After the editor's introductory volume, pride of place in the series must perhaps be given to the primer on "Injuries of Joints," not only on account of the importance of the subject, but also for the masterly way in which Major Robert Jones has managed to epitomise the experience of a lifetime in less than 200 pages. Major Jones deals with injuries rather than with wounds of joints, since he is writing from the standpoint of those who are treating soldiers after their return home. He covers the whole subject of injuries to joints from the general principles which underlie successful treatment to a detailed consideration of injuries involving particular articulations. He not only says what might be done for the relief of each condition, but he tells what he himself would do and how he would do it. He realises from the commencement that the main object of the surgeon in war time is to return the soldier to duty as soon as possible, and that it is necessary therefore to adopt different methods from those which are followed in ordinary civil practice. The primer is a safe guide for the young surgeon, and is a valuable help to those of greater experience who are called upon to treat these injuries which form some of the most serious and tedious of the war. Major Jones illustrates his teaching by means of numerous blocks showing different kinds of splints and their mode of application. The chapters on bandaging, massage and movement, on pain and stiffness, and on contraction of scar tissue are of especial value. The primer is illustrated with 29 figures, and there is a sufficient index.

Professor Rutherford Morison and Lieutenant-Colonel Richardson have written a satisfactory and useful account of "Abdominal Injuries." Beginning with diagnosis and treatment, stress is laid upon the cardinal symptoms of pain, sickness, and thirst which are common to nearly every severe abdominal injury. The method of examining an injured abdomen is described fully and the value of early operation is emphasised. The authors teach that the administration of opium "in all doubtful cases of abdominal injury is a surgical crime," and that it is only when a diagnosis has been made or an immediate operation has been decided upon that the drug may be given. Such teaching put in the plainest possible language is still necessary, unfortunately, for morphia has nearly always been injected in civil practice before the patient reaches the operating surgeon. Careful directions are given for the diagnosis and treatment of abdominal contusions, and the various internal lesions which may be associated with contusions are afterwards discussed. There is some slight confusion of thought in the section of gunshot wounds of the abdomen in war. It is stated that "bullets are said to be seldom completely sterile when they leave the rifle and on arriving at their destination infrequently." It is not clear whether the authors still believe the bullet to be an infecting agent or whether, as is more generally thought and is certainly true, the pyogenic micro-organisms come from the skin, clothes, and surroundings of the wounded man. At any rate, the teaching is good that "in the abdomen no time should be wasted in searching for bullets, and only those within easy and safe reach should be touched." The latter half of the book deals with abdominal operations. These are described in great detail and should prove valuable to those who have not had extensive experience in abdominal surgery. The treatment of intraperitoneal hæmorrhage by ligature, suture, forcipressure, and compress is carefully described, and the description is further made clear by diagrams. The authors advocate the admirable practice of emptying abdominal drainage-tubes by sucking up their contents with a syringe to which a piece of tubing is attached rather than by the more usual and bad plan of injecting lotions into them. The accidents which may follow upon abdominal operations and the more remote sequelæ are then considered. It is interesting to notice that the authors describe short-circuiting of the intestine by means of

Murphy's button. The method is thus advanced, we can only suppose, in view of those for whom the book is written, because it may seem to be easier and quicker than direct suture. There are 27 illustrations. Fig. 12 alone calls for comment, because it seems that if the directions are followed as the figure represents the surgeon will certainly cut his own finger.

Major Rawling is already so well known for his contributions to cerebral surgery that much is expected of him when he writes upon the subject of surgery of the head. The present volume fully maintains his reputation. The information is definite, and is the result of first-hand knowledge; the illustrations are excellent and the book is written in good English. The first chapter is devoted to clinical applied anatomy of the head. It gives a brief but sufficient account of much that the majority of readers once knew, but which, having forgotten, they must learn again if they are to diagnose and treat properly cases of injury to the head. In the second chapter Major Rawling points out that with the advent of trench warfare head injuries have become increasingly more numerous. He then discusses injuries of the scalp and skull, pointing out very clearly—what is too often unrecognised—that when the skull is fractured the internal table always suffers far more severely than the external. Every fracture of the skull, therefore, however trivial it may appear at first sight, is in reality associated with much and great comminution and depression of the internal table with all the associated damage to the dura mater, meningeal vessels, and venous sinuses. The attitude of the surgeon, therefore, in regard to the treatment of such fractures, is rather towards than away from operation, although operative measures are to be avoided as much as possible. The immediate consequences of fractures of the vault as exemplified by concussion, compression, and irritation of the brain are described in the light of their pathology and physiology, so that the reader is enabled to form a clear mental picture of the various changes which take place in the brain. Intracranial hæmorrhages are then considered and fractures of the base of the skull. The sixth chapter deals with infections of the brain and meninges, with the associated hernia cerebri and meningitis. Major Rawling shows himself a safe guide in the treatment of these difficult and dangerous cases, and it may be noted that in connexion with some forms of obstinate hernia cerebri he advocates a "contralateral decompression"—that is to say, in a right-sided hernia the operation of decompression is performed on the left side. There is a short account of such special injuries as wounds of the mastoid region, of the orbital region, and of the jaws, and the volume concludes with a chapter on the technique of operations on the skull and brain. The whole book is well worth reading by those who are called upon to treat a troublesome and dangerous class of injury, and it will prove a revelation of the advances made in cranial surgery to those whose remembrance is limited to the time when trephining was looked upon as a rare and formidable operation. There are 31 figures, many of really artistic merit.

Views on Some Social Subjects.

By Sir DYCE DUCKWORTH, Bart., M.D., LL.D., Fellow and Treasurer of the Royal College of Physicians. London: George Allen and Unwin, Ltd. Pp. 320. Price 7*s.* 6*d.* net.

IN a book of 300 pages Sir Dyce Duckworth collects a series of 20 addresses on various topics delivered over a score of years, some of which have already appeared in various publications. The preface states that they were mostly written in happy holiday retirements, and that they represent impressions gathered in an active professional life, modified by experiences of extensive travel in both hemispheres and some devotion, as time permitted, to other interests than those of medicine.

Criticism is disarmed by the gentle disclaimer that in all cases the author has simply striven to state what he believed to be true and to uphold the highest ideals of motive and conduct. The addresses range over a wide variety of topics not very distinctly suggested by the title, beginning with several on the ethics of medicine and the work and recreations of the body, followed by others on the temperance and feminist movements, several addresses on the nursing profession, to which Sir Dyce Duckworth has been a devoted friend, and ending with others less readily classified on Christian Science and Sunday observance. The recital of the items under a single letter in the index will serve better than anything else to suggest the wide range of topics handled: Vanity, female; Vegetables, deleterious effects of dust on; Vesalius; Virchow, Rudolf; Volcanic eruptions, a source of dust. On all the subjects which he discusses Sir Dyce Duckworth brings to bear an aristocratic and urbane judgment. Those who do not agree with him are, we think, those to whom he would rather be in opposition, large as their number is.

The volume will naturally have most interest for the author's old pupils and the nurses to whom the breadth and variety of his clinical teaching were well known, but it will also in collected form appeal to a wider, if less indulgent, circle of readers. The book is attractively printed and bound and free from typographical errors.

The Practical Medicine Series. Gynæcology Series, 1915.

Edited by EMILIUS DUDLEY, A M., M.D., and HERBERT STOWE, M.D. Chicago: The Year Book Publishers. Pp. 234. Price $1.35.

THIS handy little book is one of ten volumes published to comprise the year's progress in medicine and surgery. These ten volumes are under the general editorial charge of Dr. Charles Mix and appear at about monthly intervals. The price of the whole ten volumes is $10. The publishers state that they are intended primarily for the general practitioner, but the subdivision into volumes enables those who are interested in any special branch of medicine to purchase only the part that they require.

This volume should fill a very definite deficiency in our publications, as in the 224 pages of the letterpress many important monographs and articles are abstracted. Similar abstracts appear in several of the special journals, but here they are collected together and besides being indexed they are grouped under headings such as "Disorders of Menstruation" and "Infectious and Allied Disorders," thus facilitating reference. It will be seen that a practitioner with such a volume may easily look up the latest work on any disease which he may be treating in one of his patients, and the specialist may find rapidly references that may help him in any monograph that he is writing—for example, there are a dozen abstracts, covering 20 pages, on X ray and allied methods of treatment of gynæcological diseases. The value of the abstracts is increased by the short notes and explanations which the editors occasionally

add. The great defect of the work is the comparative neglect of the journals of certain countries, for example, those of Italy and France, and the excessive space given to comparatively unimportant German and American publications. To be of the greatest value, such a volume should be really international.

LIBRARY TABLE.

Wound Infections and Some New Methods for the Study of the Various Factors which come into Consideration in their Treatment. By Colonel Sir ALMROTH E. WRIGHT, M.D. Dub., F.R.S., Consulting Physician to the Expeditionary Force. Being an Address delivered before the Royal Society of Medicine, and taken from the Research Laboratory attached to No. 13 General Hospital, Boulogne. London: University of London Press, Limited. 1915. Pp. 96. Price 2*s.* 6*d.* net.—We are glad to see this interesting address appear in a convenient form, for no unprejudiced reader can fail to acknowledge that the methods described, and the conclusions reached after the elaborate investigations here detailed, are deserving of the most careful study. The great ingenuity shown in the methods devised to discover the conditions existing in wounds cannot fail to excite the interest and attention of everyone. It was the endeavour of Sir Almroth Wright to discover the method in which infected wounds tend to get rid of their infection, for that this does occur in many cases cannot be denied; it is what the author has called the "physiological method," and he urges that this physiological method should be followed in the treatment of wounds. He has demonstrated that in a wound which has been infected there is an outflow of lymph which exerts a powerful action on the invading micro-organisms, both by an antitryptic power and also by the phagocytic action of the exuded leucocytes. Evidently, therefore, it should be the aim of the surgeon to find some substance which will increase the formation of lymph possessing these antibacterial powers. The solution employed by Sir Almroth Wright contains 5 per cent. of salt mixed with ½ per cent. of sodium citrate. He also urges that the value of vaccine treatment, both prophylactic and therapeutic, should not be forgotten. We should advise all surgeons interested in the treatment of infected wounds—and, indeed, who is not?—to study this little work, which can be easily read in an hour or so, and contains much that is new and much that is of great value.

Alveolodental Pyorrhœa. By CHARLES C. BASS and FOSTER M. JOHNS. Illustrated. London and Philadelphia: W. B. Saunders Company. 1915. Pp. 167. Price 12*s.* 6*d.* net.—The authors of this volume claim to have discovered the specific cause of pyorrhœa alveolaris in a form of endamœba which they term the endamœba buccalis. The claim is based upon the fact that this type of organism is present in all cases of alveolar pyorrhœa, and that emetine, which is known to be almost a specific in the treatment of amœbic dysentery, has the effect, when injected hypodermically, of freeing the pockets around the teeth of amœbæ. It is doubtful whether the claim can be upheld until they are able to isolate the endamœbæ in pure culture, and by injecting into another animal produce the disease. From the book it is not clear whether local treatment is associated with the general use of emetine. If this is the case, then it would be well to ascertain whether by energetic local treatment the pocket can be freed of the endamœbæ. Spirochætes are always present in pyorrhœa alveolaris, and frequently in large numbers, and it is quite possible that they play an important part. The authors realise that for the endamœbæ to take effect there must be damage to the tissue. Excellent illustrations are given of the endamœba and detailed directions for the preparation of specimens. The book is of interest, and should have the effect of stimulating research into this widespread disease.

The Intervertebral Foramina in Man; the Morphology of the Intervertebral Foramina in Man, including a Description of their Contents and Adjacent Parts, with Special Reference to the Nervous Structures. By HAROLD SWANBERG. With an Introductory Note by Professor HARRIS E. SANTEE. From the Anatomical Laboratory, Chicago College of Medicine and Surgery. Illustrated by 11 original full-page plates. Chicago: Chicago Scientific Publishing Company. 1915. Pp. 95. Price $1.75. —This small volume forms a supplement to "The Intervertebral Foramen" by the same author, which we have reviewed previously. The little piece of research has been published in the very best style, and British anatomists would like to see work done in their departments recorded in a fashion anything like equal to this. The research deals with the structure of the human intervertebral foramen, as the former work dealt with the intervertebral foramen of the cat. The subject is naturally a very limited one, and within these narrow limits the study is a fairly comprehensive one.

JOURNALS.

The Indian Journal of Medical Research. Vol. III., No. 1.—To this number Major A. C. MacGilchrist, I.M.S., contributes his fifth communication on the Cinchona Derivatives Inquiry, and this very valuable article occupies 89 out of the total 204 pages comprised in this issue of the *Journal*. The main object of Major MacGilchrist's investigation, it appears, was to determine the relative therapeutic value of the more important cinchona alkaloids and their derivatives. The five alkaloids—quinine, quinidine, cinchonine, cinchonidine, and quinoidine—and the two quinine derivatives—hydro-quinine and ethyl-hydrocupreine (optochin)—were all examined and their relative therapeutic value tested, with the result that hydro-quinine hydrochloride was found the most effective and quinoidine the least.—Major F. Percival Mackie, I.M.S., gives a short account of his work respecting the presence of leishmania in the peripheral blood of patients suffering from kala-azar in Assam, and his paper is illustrated with a coloured plate.—A preliminary note on a new hæmogregarine found in pigeon's blood is contributed by Captain Froilano de Mello, director of the bacteriological laboratory of Nova Goa, Portuguese India.—Major H. C. Brown, I.M.S., in conjunction with Dr. K. R. K. Iyengar, furnishes an interesting preliminary note on two tests for syphilis, dependent upon the "lecithin" content of the serum. These observers believe that these two tests compare very favourably with the reaction of Wassermann and Fleming.—Major Brown also describes a simple and convenient water-bath for use in hæmolytic experiments, and this he illustrates with a plate. —A further note on bursate nematodes from the Indian elephant is given by Major Clayton Lane, I.M.S., who also supplies an article on falcaustra falcata, an investigation of oxysoma falcatum, von Linstow, 1906, which is illustrated with two plates.—Major J. W. Cornwall, I.M.S., director of the Pasteur Institute for Southern India, gives an account of lepisma saccharina (?), its life-history and anatomy, and its gregarine parasites. This investigation was undertaken on account of the damage done to books, pictures, and records generally, by the common silver-fish insects, supposed to be lepisma saccharina, and to try to find a means for destroying them. This article is well illustrated.—Major Cornwall, in collaboration with Sub-Assistant

Surgeon S. Ramasamy Iyer, also furnishes a short article on Arneth's index and antirabic treatment, giving the results of research at the Pasteur Institute of Southern India, Coonoor.—The first of a series of "studies in flies," dealing also with chætotaxy and pilotaxy of muscidæ and the range of their variability in the same species, is contributed by Mr. P. R. Awati, medical entomologist, who arrives at the conclusion that chætotaxy is unreliable in musca, and hence of little use in classification.—Civil Assistant-Surgeon M. Kesava Pai, of the King Institute, Madras, gives the results of an inquiry which he made into the bacteriology of dysentery in the Madras Lunatic Asylum. He states that most, if not all, of the cases of dysentery in that institution, with the exception of those due to tuberculous ulceration, are caused by a B. dysenteriæ. Infection occurs with the Shiga bacillus as well as with the mannite-fermenting groups of the dysentery bacillus, and the relatively high mortality is probably due to Shiga infections, which are known to be more severe and toxic than the Flexner infections. A second attack in an individual may be due to infection with other strains of dysentery bacilli than that which had caused the first attack. Prophylactic inoculation against this malady has, so far, been unsuccessful in its results.—A paper on malignant melanomata, especially those occurring on the heel and sole, is supplied by Captain W. H. D. Stevenson, I.M.S., of the Bombay Bacteriological Laboratory, who comes to the conclusion that injury as a determining factor in the causation of malignant melanomata of the skin is more common among Asiatics than Europeans. Of 18 skin melanomata submitted for examination, 15 occurred on the sole or the heel; in this connexion it has to be remembered that the poorer Asiatics go about habitually with bare feet.—Notes are contributed by Major S. R. Christophers, I.M.S., and Rai Sahib Sub-Assistant Surgeon Khazan Chand, of the Central Malaria Bureau, Kasauli, on some anophelines from Arabia and Mesopotamia; and Mr. C. Strickland, travelling medical entomologist, Federated Malay States, furnishes a note on anopheles brevipalpis, Roper, and a description of its eggs and larvæ, illustrated with a plate.—This number of the *Journal*, it will be seen, well maintains the standard of excellence set by its predecessors.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

Summary of Reports for Month ending May 31st, 1915.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre during month.								
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_4).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND—										
Birmingham, Central*	59	—	—	—	—	—	—	—	—	—
,, Aston	54	0·11	1·46	6·73	0·7	3·5	12·5	1·9	0·3	0·04
,, S.W.	44	0·04	1·14	3·42	0·7	3·2	8·5	1·8	0·2	0·04
Bolton	48	0·14	2·19	7·76	2·11	4·42	16·62	2·78	0·82	0·04
Exeter	51	0·02	1·71	3·17	1·14	1·92	8·01	1·16	0·15	0·01
Kingston-upon-Hull	38	0·09	3·31	3·94	3·67	4·44	15·45	2·64	0·69	0·05
Leicester	38	0·02	1·32	2·02	1·46	2·38	7·20	1·44	0·27	0·07
Liverpool	38	0·04	3·85	15·38	2·12	4·53	25·92	2·71	0·79	0·09
London—										
Meteorological Office	98	0·21	0·24	4·80	5·13	6·71	16·7	4·04	1·38	0·19
Embankment Gardens	65	0·60	7·85	9·63	2·47	6·63	27·18	3·94	0·65	0·16
Finsbury Park	39	0·17	2·69	13·38	1·09	2·18	19·51	1·27	0·25	0·02
Ravenscourt Park	38	0·04	1·14	2·55	0·60	1·65	5·98	0·95	0·24	0·07
Southwark Park	75	0·06	3·20	6·83	2·25	7·82	20·16	5·02	0·64	0·15
Wandsworth Common	38	0·08	1·20	5·14	0·68	10·55	17·65	3·12	0·64	0·01
Victoria Park	75	0·01	1·02	3·15	2·71	4·83	11·72	3·43	1·02	0·15
Golden Lane	133	0·05	2·29	2·92	2·65	4·77	12·69	3·61	1·32	0·43
Malvern	—	—	0·12	0·37	0·31	0·56	1·36	0·31	0·11	0·02
Manchester—										
Ancoats Hospital	34	0·07	4·55	10·56	2·62	6·40	24·20	2·82	0·75	0·10
Bowdon	37	0·01	0·62	2·02	0·84	2·27	5·76	1·24	0·27	0·04
Cheadle	35	0·06	1·66	3·33	0·75	2·23	8·23	1·27	0·12	0·03
Davyhulme	34	0·01	0·86	3·93	1·01	4·61	10·42	2·72	0·56	0·10
Fallowfield	29	0·04	1·71	4·77	1·16	3·51	11·09	1·85	0·40	0·05
Moss-side	34	0·06	1·18	3·93	2·35	3·23	10·75	2·01	0·57	0·06
Phillips Park	46	0·03	2·23	5·97	1·82	3·99	14·04	2·24	0·63	0·06
Queen's Park	46	0·06	1·84	2·69	3·40	5·19	12·18	2·49	0·81	0·07
School of Technology	33	0·25	4·96	11·71	1·17	3·45	21·54	1·81	0·56	0·03
Whitefield	37	0·01	1·13	4·21	1·68	4·36	11·39	2·39	0·38	0·06
Newcastle-on-Tyne	48	0·22	3·82	8·59	1·63	4·61	18·87	2·92	0·61	0·20
Oldham	48	0·43	7·03	36·2	1·36	4·07	49·1	2·59	0·62	0·14
Sheffield—										
Attercliffe Burial Ground	35	0·09	3·02	6·53	1·91	4·02	15·17	1·55	1·41	0·03
Hillsborough Park	38	0·07	1·53	4·73	0·83	4·46	11·62	2·22	0·58	0·03
Meersbrook Park	31	0·07	1·37	3·80	0·49	3·58	9·31	1·94	0·48	0·02
Weston Park	37	0·05	1·65	4·92	0·94	3·89	11·45	2·02	0·74	0·04
York	35	0·10	1·47	3·90	1·09	2·13	8·69	1·11	0·40	0·09
SCOTLAND—										
Coatbridge	22	0·06	1·18	2·14	0·60	1·21	5·19	0·66	0·10	0·04
Greenock	34	0·05	2·373	5·45	1·124	1·87	10·86	1·150	0·122	0·11
Leith	39	0·05	1·32	3·66	1·56	2·35	8·94	1·24	0·26	0·08
Stirling†	—	—	—	—	—	—	—	—	—	—

* Results unreliable, gauge tampered with. † No returns sent in.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 91b. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall.

The public health authorities concerned in the supervision of these examinations were as follows: Dr. J. Robertson, Medical Officer of Health of Birmingham; Dr. J. E. Gould, Medical Officer of Health of Bolton; Mr. H. Lloyd Parry, Town Clerk, Exeter; Mr. A. R. Tankard, Public Analyst, Kingston-upon-Hull; C. K. Millard, D.Sc., Leicester; Dr. E. W. Hope, Medical Officer of Health of Liverpool; The Director of THE LANCET Laboratory, Meteorological Office, London; Mr. J. Ollis, Chief Officer, Public Control Department, London County Council, London; Dr. W. J. Howarth, Medical Officer of Health of London; Mr. W. Osborne Thorpe, Engineer, Urban District Council, Malvern; Mr. J. Warrington, Secretary, Air Pollution Advisory Board, Manchester; Dr. J. B. Wilkinson, Medical Officer of Health of Oldham; Dr. H. Kerr, Medical Officer of Health of Newcastle-on-Tyne; Professor W. P. Wynne, The University, Sheffield; Dr. E. M. Smith, Medical Officer of Health of York; Mr. A. G. Dutch, Sanitary Inspector, Coatbridge; Mr. J. Devine, Sanitary Inspector, Greenock; Mr. Thomas Bishop, Sanitary Inspector, Leith; and Mr. W. W. Kelso, Sanitary Inspector, Paisley.

The analytical work involved in these returns was undertaken respectively by J. F. Liverseege, F.I.C., Birmingham; Harry Hurst, B.Sc., F.I.C., Bolton; F. Southerden, B.Sc., F.I.C., Exeter; A. R. Tankard, F.I.C., Kingston-upon-Hull; S. F. Burford, Leicester; W. H. Roberts, M.Sc., F.I.C., Liverpool; S. A. Vasey, F.I.C., Director, THE LANCET Laboratory (London Meteorological Office collections); J. H. Coste, F.I.C. (Embankment Gardens, Finsbury Park, Ravenscourt Park, Southwark Park, Wandsworth Common, Victoria Park collections), London; F. L. Teed, D.Sc., Golden-lane, London, E.C.; C. C. Duncan, F.I.C., Malvern; E. Knecht, Ph.D., M.Sc., Manchester collections; J. J. Dunn, D.Sc., Newcastle-on-Tyne; Samuel Urmson, Oldham; Professor W. P. Wynne, Sheffield collections; S. H. Davies, M.Sc., York; Messrs. R. R. Tatlock and Thomson, Coatbridge; J. W. Biggart, F.I.C., Greenock; A. Scott Dodd, B.Sc., F.I.C., Leith and Paisley.

THE LANCET.

LONDON: SATURDAY, OCTOBER 9, 1915.

The Hygiene of Illumination.

THE publication of the report of a Departmental Committee on Lighting in Factories and Workshops[1] marks a new epoch in the history of public health in Great Britain, since it is the first time that lighting has been officially considered as a hygienic factor, taking its place by the side of heating and ventilation. And this is the more remarkable as the effects of light on the physical and mental health of the animal organism are a matter of common knowledge and experience. Everyone feels the difference in his spirits if the day is dark and gloomy or bright and sunny, and many will recognise that the difference is not merely a subjective experience, but is actually measurable in terms of business or professional efficiency. The gloom of a London winter may well be partly responsible for the lack of vitality at this season of the year and for the heightened death-rate, especially among the old, in the period of shortest days; and part of the advantage derived from an Alpine holiday at this season may with equal justice be ascribed to the intensity of the light, which, even if the sky is obscured, is immensely greater in the thinner, drier air, as the shortened photographic exposure testifies. Probably the absence of well-recognised standards of measuring illumination has been the chief impediment to any practical dealing with the matter by legislative authority, for it must strike the medical man as anomalous that a factor in the preservation of health the value of which has been common knowledge for so long, should have remained unstudied by the official departments of Government until to-day.

To measure the temperature of a room a simple and cheap instrument is available, and everyone is familiar from his youth with even so complicated a thermometric scale as the one devised by FAHRENHEIT, with which we still persist to the scandal of all continental scientists. The standard of ventilation is less precise, but most people are familiar with the idea of a condition of air which is inimical to health. The view that a certain amount of carbonic acid present in the air is necessarily dangerous has had to be much modified, and those who hold that ventilation is a physical rather than a chemical problem are prevailing in argument; but into the composition, the temperature, and the movement of air much scientific enquiry has been made. But any light standard is at the present time quite unfamiliar to the public, to whom the term "foot candle" or "meter candle" would be quite unintelligible. The eye itself is to blame for the failure to invent any artificial standard of measure, for in its wonderful adaptability to varying illumination—so great that a millionth of the intensity of direct bright sunlight is still sufficient to distinguish distinctly the outlines of objects—we seem to carry about with us a sufficiently delicate lucimeter. The Departmental Committee on Lighting in Factories and Workshops, with Dr. GLAZEBROOK, Director of the National Physical Laboratory, as its chairman, has started with a unit of illumination, and has determined by 4000 measurements in 163 rooms of 57 factories the exact degree of illumination in units of the places where the work is done, of the corridors and passages where the workers go to and fro, of the entrances and approaches to the workshops. It is astounding to be told with authority that in a workroom with first-rate top lighting the illumination varies from 2 to 10 per cent. of that outside in the open. From 90 to 98 per cent. of light rays denied to the worker who enters the best-constructed modern workroom! And with lighting from side windows at the usual working distance from these 2 per cent. of this "daylight" factor is the maximum obtainable. If light as such is a necessary factor in maintaining perfect physical health, how much to be pitied is the indoor worker with, even under favourable conditions, but one-fiftieth of this healthful influence in comparison with the outside worker. Whilst the Departmental Committee is not prepared to assert any proven harm to health resulting from bad lighting conditions, it tabulates a general impression that unsatisfactory lighting is, in various ways, prejudicial to health. Complaints as to eyestrain and headaches, attributed to insufficient light, are common. The prevalence of the use of spectacles amongst workers in certain processes (embroidery, brass-wire weaving, tailoring) has been brought forward as an indication of the bad effects of these occupations upon the eyes.

These statements are familiar and confirm what has already long been known or assumed to be true. New is the connexion which the figures collected suggest between deficient lighting and "persons falling": such accidents are a commoner form of mishap during the period of year when artificial lighting is used than in the summer months. The probable accident-rate per hour may be even 40 per cent. higher for artificial as compared with natural lighting. Indirectly, too, as well as directly, a high illumination tends towards hygiene. In dark corners dirt accumulates unnoticed, a fact already tacitly recognised in the regulation regarding adequate lighting of underground bakehouses. Improved lighting increases both the quantity and the quality of the output of work; in one instance the earnings of the workers increased by more than one-tenth after the installation of a better system of lighting. This from the workers' point of view; and from the foreman's standpoint good lighting is essential for proper

[1] First Report of the Departmental Committee on Lighting in Factories and Workshops. Vol. I., Report and Appendices. London: Eyre and Spottiswoode. 1915. Price 11*d*.

supervision and for the detection and prevention of idling. From every point of consideration light is a blessing in factories and workshops, and medical men will welcome this report as the first step towards the standardisation of the light-supply of indoor labourers.

Education and Health.[1]

THE annual report for the year 1914 of Sir GEORGE NEWMAN, principal medical officer to the Board of Education, is a record of great results achieved in circumstances of exceptional difficulty, for the school medical service, owing to the junior standing of the larger part of its personnel, has been more seriously depleted by reason of War Office requirements than almost any other section of the profession. A good record for 1914 is an earnest of better things to follow, when normal conditions have been restored. As indicating the magnitude of the work which this report covers, it may be stated that in England and Wales alone nearly two million children annually come under the medical jurisdiction of the educational authorities, and that of the 680,000 physical defects discovered 375,000 receive treatment either in school clinics or in other medical institutions to which they are referred. While the necessity of immediately treating these defects is fully recognised in the report—the actual words are "to remedy defects is an axiom of State economy"—Sir GEORGE NEWMAN repeatedly insists on the far greater importance of dealing with the causes of physical inefficiency while they are yet amenable to the prophylactic method, and while there is a chance of curing disease still in the making. To his lively appreciation of this basic principle must be ascribed his insistence on having his say in the destinies of that rapidly increasing number of schools for mothers, which partly rely for their maintenance on grants from the Government. It must be exceedingly gratifying to the chief medical officer of the Board of Education to have it now within his power to dispense handsome pecuniary benefactions on the very institutions for which in their early days he worked so hard. 166 schools for mothers now enjoy grants from the Board of Education. To the services given in return for these welcome contributions handsome acknowledgment is made in the preface to this report. Speaking of the decline in recent years in infant mortality Sir GEORGE NEWMAN says: "Broadly speaking, this saving of 20,000 lives per annum has been secured mainly owing to more enlightened mothering, the better care of infancy, and the effective treatment of infantile disease, results largely due to an improvement in the education and training of the mother. This remarkable result is attributable in large measure to the services of voluntary societies." The same agencies which effect a reduction of actual deaths among infants uniformly, with a strictly comparable degree of certainty, raise the standard of physical efficiency of those who survive. All will probably agree with a lesson indicated frequently in the report that there is great need of coördination between the work of schools for mothers, day nurseries, nursery schools, infant consultations, and the school medical service. That important period in the life of the child which covers the interval between infant consultation and supervision by the school medical officer requires urgent attention.

One of the most interesting sections in the whole report is that which is concerned with the physical development of the school child by means of organised exercises or drill. The clash of arms, which is now rending Europe and depriving the country of much of the best of its manhood, emphasises as nothing else could have done the need for husbanding our resources. Our losses can only be made good by providing constant relays of healthy and well-developed children to take the places later of those who are killed. When in 1909 the Board of Education revised its syllabus of physical exercises for the public elementary schools a modified system of Swedish exercises was introduced. This change, like similar reforms instituted in the navy in 1902 and the army in 1907, has conferred unmistakable benefits on the younger generation both from the point of view of carriage and bearing and of general physical health, and this in spite of the fact of the deficiency in numbers and inefficiency through inexperience of the greater proportion of those who were responsible for giving the instruction in the new exercises. It is fully recognised by the advisers to the Board that, for reasons of expediency as well as of economy, the elementary school teachers must be relied upon to give the instruction. This being so, it is all the more necessary, if substantial progress is to be made, that these teachers should themselves be properly taught and their work adequately supervised. For this reason the Board strongly advocates the appointment of organising instructors of physical training; up to the present probably not more than one-fifth of the educational areas have been provided with supervisors of this kind. One of the outstanding defects of the instruction in physical development given in elementary schools by inexperienced teachers is "dullness." This can not only be avoided, but the lessons made most attractive and exhilarating by the adoption of easily acquired methods of conducting the classes. One of the most striking results of the systematic teaching of Swedish exercises by elementary school teachers has been the provision of a ready-made supply of instructors of physical drill for our new armies. Although the total number of teachers from our elementary schools who have volunteered for service and have secured non-commissioned officer's rank as instructors of this kind is not accurately known, it is believed to be very large indeed. To quote one instance only: in Sheffield, out of 82 teachers enlisting, 25 were accepted as Swedish

[1] Report of the Chief Medical Officer of the Board of Education for 1914. Seventh Annual. London: Eyre and Spottiswoode, Limited. Price 1s. 7d.

drill instructors with rank of non-commissioned officer on the production of a certificate given by the superintendent of physical training in Sheffield. There can be little doubt that lack of organised training of this kind has been in the past, and in many cases still is, one of the important factors in the unsatisfactory physique of children. Formal exercises such as are ensured by the Swedish system are now recognised as being almost necessarily complements to the less formal but equally beneficial effects of field games, swimming, and dancing, if the best results in the direction of physical development and mental discipline are to be expected. Many useful suggestions are made in the report for the better education of the instructors by means of systematised teaching at training colleges, and in Saturday as well as in vacation classes. In view of the fact that the Board recommends the supervision of the whole of this important department to be vested in the hands of the school medical officers we would suggest that some adequate provision be made for the instruction of these officers themselves, or they may find themselves in a somewhat invidious position.

The report makes some very interesting references to the special work done for the various educational authorities in the direction of original research by the medical officers in their employment. Excellent results have already been obtained by these inquiries, and much more is to be expected. A hopeful account, too, is provided of the work done by the dental surgeons in the service of the education authorities. At present only 251 dentists, some whole-time, others only part-time officers, are engaged in this branch of the work—a very small number to supervise the dental requirements of some 6,000,000 children. The work, however, which has already been done has proved itself directly and indirectly beneficial to the recipients of the treatment. Nothing is perhaps more striking in recent medical progress than the wide recognition that now exists of the importance of sound teeth and the perils of neglected oral sepsis. That these perils may have been exaggerated in certain directions is admitted, but alarmist counsels have had their good result, as it is by them mainly that the popular intelligence has been stirred to assist the medical profession to find organised means of remedy.

THE Hull Masonic Lodges have sent a cheque for £400 to provide an ambulance car for use at the front, and £200 have also been raised for equipment.

THE Parker-street out-patients' department of the Manchester Royal Infirmary will be closed next week owing to the shortage of doctors. The staff of the infirmary in normal times covered the work at three branches—the Royal Infirmary, the out-patients' department in Parker-street, and the accident and out-patients' department in Roby-street. Owing to military demands the out-patients' department at Roby-street had to be closed some time ago. All out-patients after Oct. 11th must attend at the Royal Infirmary, while the Roby-street branch will deal with accident cases.

Annotations.

"Ne quid nimis."

ROYAL COLLEGE OF SURGEONS OF ENGLAND: MUSEUM DEMONSTRATIONS.

A SERIES of demonstrations of specimens in the Museum of the Royal College of Surgeons of England will be given during October and November. The demonstrations are intended for advanced students and medical practitioners, and will take place in the theatre of the College, Lincoln's Inn-fields. The dates and subjects of the demonstrations are as follows: Friday, Oct. 15th, Professor Arthur Keith, Specimens illustrating the Anatomy of the Heart and Blood-vessels; Monday, Oct. 18th, Mr. S. G. Shattock, Specimens illustrating Rickets, Cretinism, &c; Wednesday, Oct. 20th, Mr. J. F. Colyer, Specimens illustrating the Injuries and Diseases of the Teeth of the Anthropoid Apes; Friday, Oct. 22nd, Professor Keith, Specimens illustrating the Anatomy of the Lungs, Air-passages, and Thorax; Monday, Oct. 25th, Mr. Shattock, Specimens illustrating Foreign Bodies; Wednesday, Oct. 27th, Mr. Colyer, Specimens illustrating Irregularities of the Teeth in Man; Friday, Oct. 29th, Professor Keith, Specimens illustrating the Anatomy of the Alimentary Tract; Monday, Nov. 1st, Mr. Shattock, Specimens illustrating Actinomycosis, Leprosy; Friday, Nov. 5th, Professor Keith, Specimens illustrating the Anatomy of the Brain, Spinal Cord, and Chief Nerves; Friday, Nov. 12th, Professor Keith, Specimens illustrating the more important Features of the Upper Limb; Friday, Nov. 19th, Professor Keith, Specimens illustrating the chief points in the Anatomy of the Lower Limb. Professor Keith and Mr. Shattock will demonstrate at 5 P.M., and Mr. Colyer at 5.30 P.M. Professor Keith's demonstrations are designed to meet the needs of first aid and ambulance students, and are open to all men attached to companies of the Royal Army Medical Corps and others. Dental students are specially invited to attend Mr. Colyer's demonstrations.

STEREOROENTGENOGRAPHY OF THE ALIMENTARY TRACT.

THE value of the X rays in assisting diagnosis in many departments of medicine and surgery is very great, but it is probable that they are nowhere of more value than in the recognition of morbid conditions in the alimentary canal, for here they are able to exhibit not only the presence of organic changes but also the existence of functional disturbances. The ordinary skiagram is often difficult of interpretation, but the use of stereoskiagrams goes far to remove many of the difficulties, for then we obtain not merely a record of shadows but a real picture. As Dr. Case[1] puts it: "Instead of a mere flat record of shadows of varying degrees of density, the meaning and significance of which must often be more or less a matter of inference, subject to a degree of obscurity and uncertainty, one sees solidity and perspective, a real picture." In order to obtain a good stereoscopic skiagram great care is needed in the choice of tube and other apparatus, and no little experience is also required if the best

[1] Stereoroentgenography of the Alimentary Tract. By James T. Case, M.D., Roentgenologist and Assistant Surgeon to the Battle Creek (Michigan) Sanitarium; Roentgenologist to St. Luke's Hospital, Chicago, &c.

effect is wanted. Dr. Case's work is a very elaborate attempt to provide a large number of stereoscopic skiagrams of actual instances of disease and disorder of the alimentary canal, and we can unreservedly praise the results which have been obtained. There are in all 100 stereoroentgengrams, as the author calls them, of which four deal with the apparatus and not with disease, but these are very helpful, as they assist us to appreciate the accuracy of the stereoscopic effect. The stereograms are best examined, as Dr. Case says, with a Wheatstone's stereoscope, which was indeed the original instrument, but the more common form is more portable. By the help of skiagrams such as these the practitioner and student will be enabled to obtain a much better idea than in any other way of those affections of the alimentary tract which can be examined in this manner, and they will also assist the surgeon in the interpretation of skiagrams of cases under his own care. No. 76 shows gall-stones more satisfactorily than we have ever yet seen in a skiagram. Every picture is accompanied by an explanation of the appearances shown. We cannot doubt that the value of the work is enhanced by the fact that the roentgenologist who took the skiagrams is also a surgeon.

A HABITUAL CRIMINAL.

"YOU will undergo three years' penal servitude," Mr. Wallace, K.C., said to William Saunders, a prisoner at the London sessions recently, "and probably you will spend the time in the prison infirmary." The man upon whom he was passing sentence was 69 years of age, and since 1861 had been condemned to 23 periods of imprisonment, including ten years' penal servitude meted out to him in 1881, when he was convicted for stealing boots. He must then have been out of prison for some time, as the sentence which immediately preceded was one of seven years passed in 1867. Since 1890, however, when he was sent to prison for 21 days, he had undergone 14 periods of incarceration, including one of five years. The chairman's prophecy that he would spend the next three years in the prison infirmary may have been prompted by his obvious physical incapacity, but it is to be hoped that the mental as well as the physical condition of the convict will receive serious consideration, and that means may be found, if he survives, to prevent his release. Whether mentally defective or not, he is not likely to remain honest if turned loose again when over 70 years of age, and it must be remembered that on 24 occasions honest citizens have had to undergo robbery at his hands and to face the trouble and inconvenience of appearing to prosecute.

THE TREATMENT OF MEASLES BY SERUM.

A SEVERE epidemic of measles at Ancona in 1914 resulting in a mortality of 2·89 per cent. induced Dr. U. Majoli[1] to try the effect of treating some of the cases with the serum of patients who were convalescent from the disease. Of the 1938 cases occurring in the town 58 were admitted into the hospital, for the most part between 2 and 10 years of age, and among these the mortality was 25·86 per cent. The reason of this high mortality was due to the fact that only the severe and complicated cases were sent to the hospital. Dr. Majoli made use of the serum of patients with measles who had not been treated by drugs, had no clinical complication, and were in early convalescence. The best results were obtained from a polyvalent serum, consisting of equal parts taken from three patients. The amount injected varied, according to the case and severity of the disease, from 15 to 20 c.c., and the injections were practised—5, 10, 20 c.c.—every 24 hours. The cases treated were eight in number, the majority about 9 years of age. There was no instance of serum disease, the duration of the fever was shortened—four to five days, the eruption faded early, and no complication occurred in any of the cases.

[1] Il Policlinico, Sept. 12th, 1915.

THE IMMEDIATE PLATING OF COMPOUND FRACTURES.

IN another part of our present issue we print an article in which the author, Lieutenant Vernon Pennell, R.A.M.C., urges that the best treatment for the compound fractures which are so common in war is the immediate application of some form of internal splinting; he advises this in all cases of compound fracture in which an incision is needed for ample drainage and efficient cleaning and where skiagraphy shows malposition with conservative treatment. In some cases he affixes a plate and in others he sutures the fragments with silkworm gut, and in other cases when there is much loss of bone he employs a bone graft from the tibia or fibula. As to his results, Mr. Pennell tells us that they are all he could wish, and that the position of the fragments is much better than could have been obtained by any other treatment. We will hardly venture on a definite expression of opinion at present until the method has been employed more widely, but we must mention that the results he has obtained are not in accordance with those obtained by men who have attempted the early operative fixation of septic compound fractures. In this connexion we have heard of some most unfortunate results. The matter is ripe for discussion, as individual experiences must now be very numerous and opinions appear to be discordant.

PYLOROSPASM IN INFANTS.

THE etiology of the disease sometimes known as congenital hypertrophic stenosis of the pylorus in infants is not known. It is believed that it is not a congenital state of affairs in many cases, and that there is no stenosis of the pylorus in many cases also; in all, however, there is spasm of the hypertrophied circular muscle of the pylorus, so that the name "pylorospasm" seems to have advantages, and in addition to be non-committal. The cause of this muscular hypertrophy is not clearly known. Some hold that it is the result of unduly rapid but otherwise normal developmental processes. Others attribute it to over-exercise secondary to excessive nervous stimulation, of a reflex character. The literature of the subject is very extensive, and is discussed by Dr. Delprat[1] at some length, as is the treatment. Of the operative procedures, whether anterior gastro-enterostomy, stretching of the pylorus, or, most commonly, pyloroplasty, Dr. Delprat says little. Treatment by dieting has varied considerably in the hands of different experts. Some lay stress on the administration of small quantities of food at short intervals, others do not; some insist on the

[1] Nederl. Tijdschr. v. Geneesk., Amsterdam, 1915, ii., 1316.

importance of washing out the stomach to get rid of irritating matter that causes the pylorospasm, while others think this unnecessary; the administration of warm water enemas is often advised. In Germany the passage of sounds or catheters through the contracted pylorus to dilate it mechanically has been widely advocated during the last five years. Hess argues that if a No. 15 catheter will pass the pylorus there is no organic stenosis. Dr. Delprat has tried this mode of treatment several times, but could not make sure of passing the sound into the duodenum within 15 minutes, and appears to think ill of the method. Finally, the treatment of pylorospasm by drugs is discussed. Among the drugs used have been opiates and antispasmodics, such as cocaine, atropine sulphate, or novocaine (1 milligramme five times a day before food), dionine (1 milligramme every three hours), anæsthesin (5 centigrammes before each feed), and papaverine hydrochloride (5–10 milligrammes subcutaneously or by the mouth half an hour before food). Papaverine, one of the alkaloids of opium, relieves the spasm of involuntary muscle, and has been used extensively to treat the pylorospasm of infants. Dr. Delprat gives an account of its use in 5 cases—in 3 with success, in 2 without it; and the conclusion reached is that paperavine is not a specific for the treatment of pylorospasm. Details of 16 more cases of pylorospasm treated in other ways are given; it is noted that 5 out of the total of 21 patients were breast-fed. In a general way Dr. Delprat advises that the infant should be kept very quiet before and after feeding; usually 10 small feeds are given in the 24 hours, rather than five large feeds, and at the outset 10–15 c.c. should be given every hour. Subcutaneous injections of physiological salt solution are advised. Of the 21 infants treated, 1 was lost sight of, 1 died from pneumonia while recovering from the pylorospasm, 6 died from inanition, and the remaining 13 had recovered or were well on the way to recovery when Dr. Delprat wrote.

RANCID BUTTER.

IT seems logical to conclude that when a food becomes unpleasant to the taste and develops a disagreeable smell it is no longer fit for consumption. That view, at all events, will surely be accepted in the case of the evil-smelling egg and probably of rancid butter also. The rancidity of butter is due to a change in the composition of the fat, brought about probably by bacterial agencies stimulated by air and light, and likely enough the products are unwholesome. The removal of these products by washing, perhaps with the addition of a little carbonate of soda or other neutraliser, renders the fat sweet and non-acid again. Some months ago a consignment of rancid butter was seized in the metropolitan borough of Bermondsey by the food inspector, who gave it as his opinion that the butter was rancid and unfit for human consumption. This opinion was confirmed by the medical officer of health, Dr. R. King Brown, and the public analyst who analysed the butter, and also samples of cake and shortbread which had been made with this butter. A stop order had been placed on the butter in accordance with the Unsound Food Regulations of the Local Government Board, and eventually a summons was applied for at the Tower Bridge police-court in order that the magistrate should decide whether the butter was unfit for consumption. There could be little doubt of its rancidity since the analyst reported that it contained 3·16 per cent. of fatty acids compared with a figure for fresh butter of well under 0·5 per cent. The magistrate, after hearing chiefly chemical and practically no physiological evidence, decided that the butter was fit for human consumption, and so no order was made under the regulations and the consignment was released. It does not appear to be disputed that the butter was rancid, the question to decide being whether in that case it was unfit for food. Its destiny was presumably cooking purposes, in which its rancidity would become more or less obscured. Having regard to the nature of the process of rancidity, we may be wise in entertaining a suspicion that rancid butter is not a wholesome food. It appears that though air plays a part in this process the change is due not directly to air, but to the stimulus of oxygen given to certain micro-organisms, amongst which are included oïdium lactis, B. fluorescens liquefaciens, and cladosporium butyri. The fact that such a butter would be objectionable and unpalatable in the ordinary way self-condemns it. Any food, generally speaking, that excites nausea must be regarded as unwholesome.

GANGRENOUS EPIPLOIC APPENDIX SIMULATING APPENDICITIS.

IN the *Boston Medical and Surgical Journal* Dr. A. R. Kimpton has reported a case of a rare condition—gangrenous epiploic appendix simulating appendicitis. A man, aged 42 years, was seen at midnight for acute abdominal symptoms. For 30 hours he had been suffering from pain in the right lower quadrant of the abdomen, which had been increasing. For the past four or five hours hot fomentations had been applied with but slight relief. When examined the patient had a great deal of nausea, almost to the point of vomiting. He had had one or two similar attacks, which had been of short duration. The bowels had acted regularly. The patient was very obese. The temperature was 98·8° F. and the pulse 80. The lower right quadrant of the abdomen showed moderate rigidity and spasm with marked tenderness over McBurney's point. There were thus signs of appendicitis. A right rectus incision was made. There was no free fluid in the abdomen and no evidence of fat necrosis. In the region of the appendix an almost black body was found; this was an epiploic appendix which had apparently twisted upon itself. It was tied off and removed. The vermiform appendix itself was perfectly normal but was removed. The abdomen was closed in layers without drainage. Convalescence was uneventful except for ether bronchitis and some breaking down of the superficial fat in the abdominal wall.

LONDON INSURANCE COMMITTEE.

AT a meeting of the London Insurance Committee marked attention was called to the financial position of the committee by Mr. Handel Booth, M.P., and others, including Mr. Rockcliffe, chairman of the Finance Committee. As a result of the discussion which took place upon this subject a committee was appointed to confer with the Insurance Commissioners on the subject of the committee's finances. The difficulty which many committees share with the London Committee arises out of the inadequacy of the funds at their

disposal for the provision of sanatorium benefit in an effective form, combined with the conditions created by war. The revision of National Insurance finance will, no doubt, occupy the attention of the legislature when peace reigns once more, and when committees, like individuals, will be better able to estimate their true position and their needs for the future. In the meanwhile they will have to practise, like individuals, patience and economy, with temporary loss of their efficiency for good.

ACUTE PNEUMONIA FOLLOWED BY PNEUMOTHORAX.

AT a meeting of the Société Médicale des Hôpitaux of Paris M. P. Ménetrier and M. A. Pascano reported a case of pneumonia followed by pneumothorax. Although both conditions are common their association is exceedingly rare. It is true that during the first half of the last century several observers were struck by a tympanitic note with weakening of the respiratory murmur which they sometimes found in the vicinity of the hepatised lung, especially in the antero-superior part of the chest. They attributed these signs to pneumothorax complicating the pneumonia, which they explained by a hypothesis then held—gaseous exhalation through an unperforated pleura. Most of these cases were published by British writers, the first by Graves. But they were purely clinical; none was verified by post-mortem examination. In his "Traité de la Pneumonie," Grisolle criticises them, rejects the hypothesis of the passage of gas through the intact pleura, and states that he never observed pneumothorax in pneumonia. As a matter of fact, the complication is not mentioned in recent works. The case related by M. Ménetrier and M. Pascano is not open to criticism, for the existence of pneumothorax was verified by a necropsy. A man, aged 54 years, was admitted into hospital suffering from dyspnœa and pain in the right side of the chest. For several years he had been subject to bronchitis, especially in winter. His present illness began a week before with high fever and acute pain in the right side of the chest. The pain persisted and was accompanied by cough with a little non-characteristic expectoration. Two days before admission, after a fit of coughing, he was seized with acute pain in the right side. This radiated particularly into the back and right side of the abdomen, more than the old pain, which was diminishing. The pain became agonising and was accompanied by sudden increase of the dyspnœa and abundant sweating. On examination there was severe dyspnœa which had reached the stage of orthopnœa. The face was "leaden" and covered with sweat, and the lips were cyanosed. The whole of the right side of the chest was enlarged and immobile, the percussion resonance was increased except at the base, and vocal fremitus was absent. Over the whole side there was intense amphoric breathing, which diminished towards the base and increased posteriorly towards the hilum of the lung. The voice and cough had also an amphoric character. A succussion sound was difficult to obtain and slight. On the left side respiration was puerile and sibilant, and subcrepitant râles were heard. The heart was slightly displaced towards the left. The liver was depressed to the extent of four finger-breadths below the costal border. The temperature was 99·8° F. and the extremities were cold and cyanosed. The patient became worse during the day and died in the night. At the necropsy gas escaped on opening the right pleural cavity, which was found full of air with a little serous fluid. The right lung was collapsed, but the lower lobe was enlarged, covered with fibrinous membranes, and hepatised. On its surface were two large emphysematous bullæ with puriform contents. On section of the hepatised lung the surface was not granular but smooth and in colour reddish-brown, passing into grey in places. The bronchi were filled with mucous exudation and did not contain air. The upper and middle lobes were irregularly collapsed, there being emphysematous parts which projected. In the middle lobe at the anterior part was a group of greatly distended emphysematous vesicles, forming an irregular tumour 3 to 4 cm. long. One of the thinned walls of these vesicles had ruptured, probably during coughing, and allowed the passage of air into the pleural cavity. At the apex of the lung was a zone of tuberculous sclerosis with little cretaceous nodules. In the left lung there were also tuberculous scars at the apex, and the anterior border was very emphysematous. Smears from hepatised lung revealed the presence of the pneumococcus. Independently of the pneumonic lesion, the lung showed the usual changes of chronic bronchitis. Thus acute lobar pneumonia in a chronic bronchitic was followed by pneumothorax on the fifth day. Evidently the hepatisation, by restricting the respiratory field, aggravated the emphysema, distending the bullæ and predisposing to rupture during the coughing.

SCARCITY OF RUSSIAN MEDICAL MEN.

THE Minister of the Interior, Prince N. B. Sherbatoff, has applied to the Minister of Education, Count P. M. Ignatieff, to consider measures for increasing the number of the medical men of the country. In his memorandum he observes that a large portion of the Russian people is now deprived of the possibility of medical assistance. In view of the insistent necessity of taking advantage of all available medical aid, Imperial permission was requested to put medical men of foreign universities, whether Russian subjects or subjects of allied or neutral countries, in Russian positions, as well as students attending the last courses of the medical faculties. But these extraordinary measures will not obviate the need for more permanent measures for the increase of the number of doctors. One of these specially indicated in the memorandum is the increase of the number of superior medical schools.

STUDENTS to the number of 110 have entered for the coming session at the London (Royal Free Hospital) School of Medicine for Women.

The Exhibition of Fracture Apparatus will be open to visitors at 10.30 this Friday morning, Oct. 8th, at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W. The formal opening will be made at 3 P.M., Dr. Frederick Taylor, the President, in the chair, by Sir Alfred Keogh, and Sir Almroth Wright will then deliver an address. At 5.15 P.M. Sir Almroth Wright will give a demonstration which will be repeated on the following days of the exhibition. The exhibition will remain open until 5.30 P.M. Wednesday, Oct. 13th, the extension of time being to give many lay workers an opportunity of visiting it.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Women and the Fellowship of the Royal College of Physicians of Ireland.

IT is now nearly 40 years since the King and Queen's College of Physicians of Ireland, as it was then styled, was the first corporation in the United Kingdom to permit women to obtain its diploma on the same terms as men. At that time the College had two grades—that of Fellow and that of Licentiate. A number of women speedily became Licentiates. In 1878 the new grade of Member was established, intermediate in rank between that of Fellow and of Licentiate. All the existing Licentiates, a number of women among them, automatically became Members. Thereafter admission to Membership was by examination, and several women became Members in this way. Fellowship of the College is given by election, and the by-laws stated that "Members of the College alone" were eligible. No woman Member was nominated for election to Fellowship until 1914, when one lady, whose candidature was subsequently withdrawn, was nominated. Early this year another woman Member put the query definitely to the College as to whether women Members were eligible for Fellowship, and then for the first time the College was obliged to consider the matter. Although the by-law stated that "Members alone" were eligible for Fellowship, they did not make it clear that all Members, irrespective of sex, were eligible. The by-laws have now been amended so as to prevent any ambiguity on the question, and the amendments having been submitted to the Lord Lieutenant in Council, have "not been disapproved." It is now clear that all grades of the College—Licence, Membership, and Fellowship—are open equally to women as to men.

Insanity in Ireland.

Supplementing the summary of the annual report of the inspectors of lunatics in Ireland, which appeared in your issue of Sept. 11th, it is interesting to note that the increase in insanity during 1914 took place almost entirely amongst the males, and that the rate of increase appears to be lessening, the average rate (per 10,000 of population) for the past five years being 5 per annum, whereas that for the entire period since 1880 was almost 10 per annum.

Health of Belfast in 1914.

The medical officer of health for Belfast has just made public his annual report for 1914, and it is inconvenient, for the sake of comparison, that the Registrar-General for Ireland has in his figures included the week ended Jan. 2nd, 1915, which makes 53 weeks in the year 1914, while the medical officer of health for Belfast bases his statistics on the year ended Dec. 26th, 1914—that is, 52 weeks. As a result the general death-rate is, according to one calculation, 19·2 per 1000, and according to the other 18·8. As it is impossible to follow two sets of statistics, and as the medical officer of health for Belfast says that "all other calculations referring to rates (except the general death-rate) were made on the figures for the 53 weeks," we follow them. The figures are based on a population estimated by the Registrar-General to the middle of the year as being 399,000 for 1914—that is, an increase of 3000 as compared with 1913. The general death-rate was 19·2 per 1000, while the birth-rate was 28·4 per 1000. The zymotic death-rate was 2·8 per 1000 and the phthisis mortality was 2·1 per 1000. The regrettable features of the report are the continued high death-rate, the infantile mortality-rate, and the continued prevalence of scarlet fever. The death-rate, 19·2 per 1000, is too high, and this—19·2—is also the average annual death-rate for the ten years 1904–1913. The infantile mortality was 143 per 1000 births, as compared with 144 in 1913, 129 in 1912, 128 in 1911, 143 in 1910, and 139 in 1909. Of the causes of the high death-rate of infants under one year, 30·5 per cent. were due to congenital debility (prematurity, &c.); 21·2 per cent. were due to diarrhœa and enteritis; 17·56 per cent. were caused by bronchitis and pneumonia; and 13·37 per cent. were caused by whooping-cough, convulsions, and measles. The clue to the continued prevalence of such a high infantile mortality is contained in page 7 of the report: "On previous occasions I called attention to the unsatisfactory condition of a large number of the back passages throughout the city, and to the urgent necessity of having them paved, drained, and completed. Little improvement was observed during the year, which is very regrettable, as their condition renders them a menace to public health." The death-rate from zymotic disease—2·8 per 1000—is high. Measles and whooping-cough accounted for 410, or 37·03 per cent. of the total number (1107) of deaths from the seven principal zymotic diseases. 2317 cases of scarlet fever were notified during the year (of whom 170 died, a mortality-rate of 7·17 per cent.), and although every effort was made to cope with the epidemic no effect was produced. We have had now an epidemic of scarlet fever in Belfast for four years, and it is still with us, for during the nine months ended Sept. 25th of this year 1345 cases have been notified, and all the length we have got is embodied in a special report addressed by Dr. B. O'Brien, medical inspector to the Local Government Board of Ireland, in his words: "All the usual steps appear to have been taken, and no adequate reason can be assigned for the continued prevalence of scarlatina in the city of Belfast"—a confession which, to put it in the mildest terms, is not very creditable to the science of public health. If such a state of affairs had prevailed in any great German city the highest authorities in bacteriology, chemistry, public health, and sanitation would have been specially told off to get at the real facts of such a serious situation. This "Report on the Health of the County Borough of Belfast for the year 1914" is a great improvement on any previous one, and is full of most interesting information which is excellently put together and well illustrated.

Ulster Volunteer Hospital.

A new wing of the Ulster Volunteer Hospital, to accommodate 100 more beds, was opened on Oct. 1st by the Marquis of Londonderry, and named by him "The Londonderry Wing," in memory of his father.

The British, Russian, and Belgian Red Cross.

On Friday, Oct. 1st, "Chrysanthemum" Day was held in Belfast on behalf of the British, Russian, and Belgian Red Cross Societies, and as a result, between collections and subscriptions, about £4000 have been raised.

The late Mr. R. W. Stewart, L.R.C.P. & S. Edin., J.P., and the late Mr. John Stewart, L.R.C.P. & S. Edin.

The death of Mr. R. W. Stewart is announced, after a lingering illness, at Glasslough, co. Monaghan, on Sept. 25th, in his seventieth year. Educated at Queen's College, Belfast, and in Dublin, in 1869 he became L.R.C.P. & S. Edin. He settled down to practice at Glasslough, where he became medical officer of the dispensary district and physician to Trough Fever Hospital. For the past 20 years he had been coroner for North Monaghan; he had, while his health allowed, a large and lucrative practice, and was a justice of the peace for the county of Monaghan. —The death is announced of Mr. John Stewart, of Belfast, which took place on Sept. 27th. A county Armagh man, he studied at Queen's College, Belfast, and Edinburgh. After qualification he began practice in a working-class district in Belfast, where he was very successful; subsequently he entered the City Council, and in 1889 was appointed surgeon to the Belfast Jail, a post he held until his death. He suffered, a few years ago, a severe bereavement in the death of his son, Dr. James Sewart, who was killed whilst in the West African Medical Service. A great personal favourite, Mr. Stewart will be much missed by friends and patients.

Oct. 4th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Extraction of Intrapulmonary Projectiles.

FOR the extraction of projectiles the lung might be thought to be a difficult and dangerous locus. An eminent Paris surgeon, Dr. Marion, has shown that in point of fact this is not so, and that the extraction of intrapulmonary projectiles is a simple and safe matter. At the start Dr. Marion was content with attacking projectiles which had produced foci of suppuration with adhesions, a condition affording an absolute indication for interference. But after removing projectiles situated at a depth of 1 or 2 cm. in the tissue of the lung he was led on to attack bodies up to a depth of 7 cm., and found this intervention equally safe and easy. The technique consisted in incision, costal resection, fixation, incision and penetration of the lung, extraction of the projectile; and, this achieved, the introduction in its place in the lung substance of a compress saturated with strong phenol, covered by the usual dressing. In all the extractions which he has made so far Dr. Marion has had no accident, serious or otherwise. Now and then during operation patients have been seized with spasms of cough and have spat up a little blood, but this has never lasted long or been troublesome. Dr. Marion has operated to date on 27 patients and extracted from these 17 bullets, five fragments of shell, and four shrapnel balls. In 17 cases the projectile was situated in the substance of the lung, free and without adhesions, at a depth varying from 1 to 7 cm.; in four cases adhesions existed between lung and pleura, and the projectile was found lying in these adhesions; in two cases the projectile was in a purulent focus open to the exterior or in the bronchi; and finally, in three cases it lay in an encysted purulent focus, to which the condition of the patient gave no clue. Only in a single case did Dr. Marion fail to extract the projectile, owing to failure to fix the lung after opening the pleura.

Polyvalent Serum in the Treatment of Wounds.

The principles underlying the method of preparation of protective serums are well known, and the secretions so obtained are efficacious only in respect of the particular microbe against which the cellular reaction has been produced. A fresh serum is therefore indispensable for each microbe of the different varieties occurring in wound infection and suppuration. To obviate this difficulty two well-known physiologists, Professor Leclainche and Professor Vallée, of the Veterinary School at Alfort, attempted to unite in the same specific serum a combination of elements corresponding to each microbic agent of the various wound infections. In 1898, Professor Leclainche presented to the Academy of Medicine a serum active against the bacillus of malignant œdema and the bacillus perfringens. In 1912, Professor Leclainche and Professor Vallée submitted a polyvalent serum prepared from the principal agents of wound infection. The serum was obtained from horses by the almost simultaneous inoculation of broth cultures of these various agents. The two experimenters demonstrated that the secretion produced by the cellular reaction to this mixture of various microbes was specific and active in destruction of each of them. The first application in various base hospitals of this polyvalent serum worked like magic. Horribly mutilated soldiers, given up on account of the gross infection of their wounds, at once made rapid progress towards recovery and are now on their feet again. After the first injection the temperature rapidly fell and the patient felt new life return. With further treatment the wounds cicatrised, necrotic tissue was extruded, and the cells acquired new vigour. There was no record of the slightest accident from serum disease or anaphylaxis.

Treatment of Wounds by Means of the Hot-air Douche.

At an army medical reunion in the Dinard district M. Louis Weiller made a report on this method, which he had been employing for a year with very favourable result. He observed a speeding-up of the cure in all wounds not containing an infected foreign body derived from bone, projectile, or clothes. But even these showed rapid improvement. The hot-air douche dried the wounds, produced an intensive aeration with fixation of oxygen, and excited the vitality of the tissues as much by its immediate shock as by the resulting congestion. It increased phagocytosis and tended to isolate the wounds by coagulating the albuminous matter on the surface. It destroyed the bacteria, thus rapidly arresting the suppuration of the infected areas, and preventing its occurrence in the non-infected. The colouration of blue pus was not altered. The pain of infected wounds was rapidly relieved, the odour removed where complicating osteitis was not present, and fever dropped. Cicatrices resulting from wounds treated by means of the douche presented a minimum of extent and a remarkable suppleness, shown by no other method of treatment; progressive scarring and its usual complications were thus avoided. In conjunction with preliminary spraying with iodine tincture of double strength and touching with silver nitrate for exuberant granulations, the hot-air douche constituted one of the simplest and most efficacious methods in the treatment of the wounds of war and their frequent complications.

Oct. 4th.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Executive Committee was held on Sept. 23rd, when the reports on the position of the Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés, furnished through Professor Jacobs, and since published in THE LANCET, were considered. A financial statement showed a substantial sum of money in hand and bearing interest on deposit in the bank. For the greater part of the Belgian medical men, refugees in England, positions have now been found.

THE WEEK'S SUBSCRIPTIONS.

The subscriptions to the Belgian Doctors' and Pharmacists' Relief Fund received during the week have been as follows:—

	£	s.	d.
Dr. Pierre Haupt	2	2	0
Dr. G. D. H. Carpenter (seventh donation, total £7)...	1	0	0
Major C. E. Southon ...	5	0	0
Western Australia Branch, B.M.A. (per Dr. J. H. Ramsay, Hon. Treas.)	83	9	0
West Kent Medico-Chirurgical Society (per Dr. W. H. Payne, Hon. Sec.)	5	5	0
Dr. S. G. Sloman	3	0	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Ltd.

THE APPEAL FOR SURGICAL INSTRUMENTS.

The Master of the Society of Apothecaries acknowledges the receipt of surgical instruments kindly contributed by the following donors:—

Mr. C. J. Heath, Devonshire-place, W.; Mr. Alfred Freer, Stourbridge; and Mr. James Noursez, Calcutta.

Surgical instruments should be sent to the Society of Apothecaries of London, Blackfriars, London, E.C.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned have been entered as Surgeons for temporary service in His Majesty's Fleet:—Murray Richard Osmond Wilson (dated Sept. 15th), Douglas McAlpine (dated Sept. 22nd), Cyrus Gerald Ainsworth (dated Sept. 25th), Timothy Joseph Hartigan (dated Sept. 27th), George Moore Johnson (dated Sept. 28th), and Allan Byars Hamilton (dated Sept. 30th).

The following appointments have been notified:—Surgeon: J. S. Ward to the *Victory*, additional, for R.N. Division. Temporary Surgeons: D. D. Pinnock to the *Pembroke*, additional, for disposal; D. A. P. Clarke to the *St. Vincent*; D. W. K. Moody to the *Natal*; R. G. Morgan to the *Colossus*; F. P. Pocock, C. H. Gow, and F. H. L. Cunningham, all to the *Victory*, additional, for R.N. Division; R. E. Tottenham, F. C. Newman, and H. F. Percival to the *Victory* for Haslar Hospital; and K. B. Bellwood to the *Pembroke*, additional, for Chatham Hospital.

ROYAL ARMY MEDICAL CORPS.

The undermentioned to be temporary Captains:—George Alexander Finlayson, late Captain Singapore Volunteer Corps (dated Sept. 13th), and Edmund Francis Neville Currey (dated Sept. 14th).

Temporary Lieutenant Arthur G. Welsford, late Captain, The Hertfordshire Regiment, to be temporary Captain (dated Oct. 6th).

The undermentioned temporary Lieutenants to be temporary Captains:—Dated August 18th: Sidney Smith. Dated Sept. 1st: John P. Charles, John Higgins, William W. Ingram, Edmund B. Jardine, David A. Laird, Henry A. Ronn, John G. Priestley, Aubrey W. Venables, Gerald Whittington, and George T. Whyte. Dated Sept. 2nd: John G. Brown, Edward R. C. Cooke, and Percy Northcote. Dated Sept. 4th: Stanley G. Luker and James H. Fletcher. Dated Sept. 6th: William J. Maloney. Dated Sept. 7th: James C. Dick. Dated Sept. 8th: Alexander Manuel. Dated Sept. 9th: Evan H. Jones, Cyril D. Faulkner, Charles L. Herklots, Geoffrey D. Harding, Douglas M. Hunter, John M. Mitchell, John Mowat, John M. Moyes, Aneurin E. Roberts, Francis C. Robbs, and Thomas H. Ravenhill. Dated Sept. 10th: John A. Andrews, John S. Arkle, Hugh J. Couchman, Edward Gordon, Bernard G. Gutteridge, Frank W. Harlow, George B. Holroyde, Reginald S. A. Heathcote, Gavin D. McLean, Donald MacIntyre, Louis A. Moran, Samuel E. McClatchey, Matthew W. B. Oliver, Henry W. Parnis, Gavin Stiell, Richard H. Stevens, Edward Seelly, Frederick E. Tillyard, Hill W. White, Gerald D. H. Wallace, and Robert E. Cree. Dated Sept. 11th: Reginald G. Abrahams, Robert M. Allan, James H. Barry, Alexander E. Chisholm, Claude N. Coad, George D. Eccles, John H. G. Hunter, Alexander W. Hendry, Richard A. Jones, John R. Marsack, Benjamin B. Noble, Thomas Bourne-Price, Robert E. Roberts, Robert C. Robertson, Philip Smith, Wilfred A. Sneath, and Walter B. Bannerman. Dated Oct. 5th: Adolphe Abrahams and Oliver Eaton.

The undermentioned Lieutenants, Canadian Army Medical Corps, to be temporary Lieutenants:—Victor George Williams (dated Sept. 4th), and Benjamin Franklin Keillor (dated Sept. 5th).

Lieutenant Clark McKerrow, from Reserve of Officers, to be temporary Lieutenant (dated June 24th).

The undermentioned to be temporary Lieutenants:—Dated July 24th: Robert Orr Whyte. Dated August 4th: John Robert Lee. Dated August 26th: Roderick MacLean. Dated August 30th: William Egon Halinan Beard and Matthew Thornton Cassidy. Dated Sept. 10th: Ernest George Fenton, Alexander Collingwood Dickson, Richard Leonard Ley, Oliver Armand James Needham Muriset, Harold Trevor Marrable, Thomas Kelly, Samuel Bryson, Henry James Flanigan, William Wilkinson Uttley, Gustavus Herbert Powell, Clare Augustus Everest, Farquhar MacRae, Horatio Minchin Hardy, Maurice Davidson, Thomas Clifford Last, Richard Fox, and James MacMurchy Watson. Dated Sept. 11th: John Follett Bullar, Richard Orderne Wilson, George Murray Grant, Henry Ireland Gascoyne Rutherford, and Edmond Doherty. Dated Sept. 13th: Charles Satchell Pantin, William Harris Best, George Errington Lloyd, James Macmillan Anderson, William Warburton, Malcolm Edward Henry Wale, Napoleon Leonard, Arthur Turnbull, and Archibald Stoddart-Walker. Dated Sept. 14th: Clement Massey Stubbs, John Bennett Julius Lyttleton Dalby, George Frederick Fawn, Roswell Park, and William Norman Gilmour.

David Hamilton Derry to be temporary Honorary Lieutenant (dated Oct. 1st).

The appointment to a temporary Lieutenancy of William R. Mackenzie is antedated to Oct. 3rd, 1914.

The appointment to a temporary Lieutenancy of Ross Millar is antedated to July 20th.

The undermentioned temporary Lieutenants relinquish their commissions:—Dated Sept. 1st: Roy R. Kerr. Dated Sept. 2nd: Clifford H. Brookes, Richard Bright, and William T. Milton. Dated Sept. 5th: Hugh McLean. Dated Sept. 11th: John M. Glasse.

INDIAN MEDICAL SERVICE.

The King has approved the grant of the temporary rank of Lieutenant in the Indian Medical Service to temporary Lieutenant John McIntire Falkiner, of the Royal Army Medical Corps, on exchange (dated August 12th).

The King has approved the grant of the temporary rank of Lieutenant in the Indian Medical Service to Edward Alexander Marie Joachim Goldie (dated May 20th), Sohrab Nusserwanji Forbes and Maneck Burjorji Patel (dated June 9th), Narain Rama Rao Ubhaya (dated June 14th), Caetano Joseph Fernandez (dated June 19th), Ardeshire Behram Pestonji and Narimon Byramji Mehta (dated June 21st), Said Shamsudin Mahamadi (dated June 24th), and Byram Burjoree Broacha (dated July 28th).

The King has approved the retirement of Major Edgar John Morgan (dated Oct. 1st).

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned Lieutenants (on probation) are confirmed in their rank:—Edwin N. H. Gray, Reginald C. Eades, and Raymond Stowers.

TERRITORIAL FORCE.

Royal Army Medical Corps.

London Mounted Brigade Field Ambulance: Captain John P. MacLulich resigns his commission on account of ill-health.

Wessex Field Ambulance: Horace James Pechell (late Captain, Territorial Force Reserve, General List) to be Captain.

Western General Hospital: Lieutenant-Colonel John W. Smith, from the permanent personnel, to be Lieutenant-Colonel, whose services will be available on mobilisation. Lieutenant Manfred Moritz to be Captain.

West Lancashire Field Ambulance: Lieutenant James Walker to be Captain.

Highland Mounted Brigade Field Ambulance: Major John W. Mackenzie to be temporary Lieutenant-Colonel. Captain Lachlan M. V. Mitchell to be temporary Major.

Home Counties Field Ambulance: Lieutenant William Cummings to be Captain.

London Field Ambulance: Lieutenant Frederick L. Golla to be Captain.

Eastern Mounted Brigade Field Ambulance: Lieutenant John M. O'Meara to be Captain.

North Midland Mounted Brigade Field Ambulance: Lieutenant Fred H. Davies to be Captain.

South Midland Field Ambulance: The undermentioned Lieutenants to be Captains: William J. Hirst, Henry E. McCready, William Bowater, Morris Wilks, Henry P. Thomason, Ralph A. Broderick, William J. C. B. Pitt, Kenneth A. P. R. Murray, Albert E. P. McConnell, John P. I. Harty, Henry J. D. Smythe, and Richard I. Dacre.

Eastern General Hospital: Lieutenant Cyril C. Messiter to be Captain.

London (City of London) General Hospital: Albert James Walton to be Captain, whose services will be available on mobilisation, and Frederick Douglas Selmes Jackson to be Lieutenant.

Northern General Hospital: Herbert Wallace Kerrigan to be Lieutenant, and Major William A. Carline to be Lieutenant-Colonel, whose services will be available on mobilisation.

Scottish General Hospital: Lieutenant Ian G. Bisset to be Captain.

Southern General Hospital: Robert Hitchings to be Lieutenant.

South Midland Casualty Clearing Station: The undermentioned Lieutenants to be Captains: Laurence Ball, Henry G. Langdale-Smith, and Leonard J. Moir.

Lowland Field Ambulance: The undermentioned Lieutenants to be Captains: Arthur W. Downes, William C. Gunn, Robert S. Taylor, Arthur W. Sutherland, George B. Eadie, Percival J. Moir, William H. Manson, James W. Burton, Andrew J. Brown, William W. Greer, Rankine G. Walker, Arthur J. G. Hunter, Archibald M. Stewart, and Clifford H. K. Smith. Robert Watson to be Lieutenant (dated August 10th). William Combe to be Lieutenant.

London Sanitary Company: To be Lieutenants: Percy Edward Lander, Alexander Middleton Brown, and James Chalmers.

The Lancashire Fusiliers: Surgeon-Major Anthony P. Nuttall resigns his commission on account of ill-health.

South Midland Mounted Brigade Field Ambulance: Samuel Percy Johnson (late Surgeon-Lieutenant, 1st Warwickshire Royal Garrison Artillery (Volunteers)) and William George Rutherford to be Lieutenants.

Welsh Casualty Clearing Station: Major Richard T. Turner, from Attached to Units other than Medical Units, to be Major. Lieutenant John H. Robinson, from Attached to Units other than Medical Units, to be Lieutenant.

East Anglian Field Ambulance: The following Lieutenants to be Captains: Thomas A. Flynn, Ernest B. Hinde, Edmund A. Goulden, Benjamin B. Morgan, and John N. Robins. Cadet Roy Dyson Langdale-Kelham, from University of London Contingent, Senior Division' Officers Training Corps, to be Lieutenant.

Highland Field Ambulance: Lieutenants to be Captains: John Strathearn, George B. Killoh, Daniel M. Grant, James S. McConnachie, Bernard G. Beveridge, Alexander C. Mallace, George Henderson, Hawtrey W. Browne, George S. Melvin, Robert T. Bruce, George McConnell, Thomas C. Britton, and John M. Milne.

East Lancashire Field Ambulance: The undermentioned Lieutenants to be Captains: Alexander M. Mackay, John Morley, Frederick S. Bedale, Gilbert Bailey, Clement A. Webster, George B. Jameson, Frederick C. Bentz, William Turner, Alexander M. Gibson, William J. Cowan, John J. Hummel, Arthur M. Johnson, Nicholas H. H. Haskins, Oliver H. Blacklay, James A. Tomb, Frederic B. Smith, Henry Wilson, Robert S. Young, and Frank G. Prestwich.

Attached to Units other than Medical Units.—The undermentioned Lieutenants to be Captains: William S. McCune, Ashley S. Hopper, Alfred N. Crawford, John Livingston, John F. Edmiston, Arthur H. Falkner, William E. Fitzgerald, Pierce N. Creagh, Robert D. Cran, George Crawshaw, Rowland L. Thomas, Lancelot W. Sparrow, Robert A. Kerr, Kenneth D. Wilkinson, Arnold Morris, Francis H. Sprague, Douglas E. Finlay, Duncan Davidson, George F. R. Smith, John K. Syms, Leslie E. Hughes, George R. E. G. Mackay, Alexander S. M. Macgregor, William T. Gardiner, Edmund F. Rose, John A. Parsons, Charles M. Mitchell, Herbert V. Capon, Gerald L. Bunting, Duncan F. Macrae, Thomas Carnwath, Charles W. Wirgman, Gordon Whitehead, Charles G. Tendi, Thomas J. Thomson, Percy H. Burton, Gerald A. Child, William A. Phillipps, and Ernest Osborne.

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Lieutenant John C. Jefferson, from East Lancashire Field Ambulance, to be Lieutenant.

DEATHS IN THE SERVICES.

Surgeon-General Sir Charles McDonough Cuffe, K.C.B., on Oct. 4th, aged 73. He entered the army as assistant surgeon in 1863 and was later appointed to the 11th Hussars. He served through the Kaffir and Zulu campaigns of 1877–79, being present at the battle of Ulundi (mentioned in despatches). He also served in the Burmese expedition of 1887–88.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 largest English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7209 births and 4879 deaths were registered during the week ended Saturday, Oct. 2nd. The annual rate of mortality in these towns, which had been 14·0, 13·8, and 13·5 per 1000 in the three preceding weeks, rose in the week under notice to 14·0 per 1000 of their aggregate population estimated at 18,136,180 persons at the middle of last year. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 12·3, or 0·1 per 1000 below that recorded in London. The annual death-rate last week ranged from 5·2 in Ilford and in Bath, 6·6 in Leyton, 6·9 in Swindon, 7·2 in Wallasey, and 7·5 in Ipswich, to 18·2 in Birkenhead, 18·8 in Sunderland, 19·2 in Gateshead, 20·8 in Rotherham, and 21·3 in Barnsley.

The 4879 deaths from all causes were 179 in excess of the number in the previous week, and included 973 which were referred to the principal epidemic diseases, against 802 and 928 in the two preceding weeks. Of these 973 deaths, 808 resulted from infantile diarrhœal diseases, 48 from whooping-cough, 45 from diphtheria, 37 from measles, 27 from scarlet fever, and 8 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 2·8, or 0·1 per 1000 more than in the previous week. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 664, 638, and 785 in the three preceding weeks, further rose to 808 last week, and included 209 in London, 45 in Liverpool, 43 each in Manchester and Sheffield, 39 in Birmingham, 30 in West Ham, and 24 in Hull. The deaths attributed to whooping-cough, which had been 44, 55, and 47 in the three preceding weeks, were 48 last week; 17 deaths were registered in London, 4 in Sheffield, and 3 each in Leyton and Liverpool. The fatal cases of diphtheria, which had been 44, 54, and 42 in the three preceding weeks, rose to 45, of which 11 were recorded in London and 4 in Sheffield. The deaths referred to measles, which had been 47, 26, and 22 in the three preceding weeks, rose to 37 last week, and included 3 each in London, Stockport, and Bury. The deaths attributed to scarlet fever, which had been 17, 14, and 18 in the three preceding weeks, further rose to 27 last week, and included 3 each in Derby, Liverpool, and Newcastle-on-Tyne, and 2 each in London, Stoke-on-Trent, and Warrington. The fatal cases of enteric fever, which had been 17, 15, and 14 in the three preceding weeks, further fell to 8 last week, but showed no excess in any particular town.

The number of scarlet fever cases under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had increased from 2360 to 2656 in the five preceding weeks, further rose to 2758 on Saturday last; 382 new cases were admitted during the week, against 385, 429, and 372 in the three preceding weeks. These hospitals also contained on Saturday last 1430 cases of diphtheria, 63 of measles, 47 of enteric fever, and 10 of whooping-cough, but not one of small-pox. The 1268 deaths from all causes in London were 56 in excess of the number in the previous week and corresponded to an annual death-rate of 14·6 per 1000. The deaths referred to diseases of the respiratory system, which had been 124, 151, and 150 in the three preceding weeks, rose to 160 in the week under notice, and were 3 above the number registered in the corresponding week of last year.

Of the 4879 deaths from all causes in the 96 towns, 174 resulted from different forms of violence and 366 were the subject of coroners' inquests, while 1398 occurred in public institutions. The causes of 27, or 0·6 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Sheffield, Leeds, Bristol, Bradford, and in 61 other smaller towns. Of the 27 uncertified causes, 7 were registered in Liverpool, 3 in Birmingham, and 2 each in Blackpool, Sunderland, South Shields, and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,345,500 persons at the middle of this year, 937 births and 644 deaths were registered during the week ended Saturday, Oct. 2nd. The annual rate of mortality in these towns, which had been 14·0, 13·7, and 14·3 per 1000 in the three preceding weeks, was again 14·3 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 13·6, against 12·3 per 1000 in the large English towns. The annual death-rate during the week ranged from 8·2 in Clydebank, 8·4 in Leith, and 8·8 in Perth to 15·3 to Kirkcaldy, 15·6 in Dundee, and 16·5 in Coatbridge.

The 644 deaths from all causes were 2 in excess of the number in the preceding week, and included 79 which were referred to the principal epidemic diseases, against 83 and 98 in the two preceding weeks. Of these 79 deaths, 48 resulted from infantile diarrhœal diseases, 10 from scarlet fever, 9 from measles, 7 from diphtheria, 3 from enteric fever, and 2 from whooping-cough, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·8, against 2·8 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had increased from 28 to 65 in the six preceding weeks, fell to 48 last week, and included 36 in Glasgow and 3 in Dundee. The deaths referred to scarlet fever, which had increased from 8 to 14 in the six preceding weeks, fell to 10 last week, and included 4 each in Glasgow and Aberdeen. The fatal cases of measles, which had been 13, 15, and 6 in the three preceding weeks, rose to 9, of which 7 were registered in Glasgow. The deaths attributed to diphtheria, which had been 18, 9, and 10 in the three preceding weeks, fell to 7 last week, and included 2 in Glasgow. Of the 3 deaths from enteric fever, 2 occurred in Dundee and 1 in Coatbridge. The fatal cases of whooping-cough were recorded in Glasgow and Falkirk.

The deaths referred to diseases of the respiratory organs, which had increased from 56 to 86 in the four preceding weeks, further rose to 93 in the week under notice, and were 22 above the number registered in the corresponding week of last year. The deaths attributed to violence numbered 21, against 25 and 27 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,212,380 persons at the middle of this year, 659 births and 426 deaths were registered during the week ended Saturday, Oct. 2nd. The annual rate of mortality in these towns, which had been 16·7, 16·8, and 16·4 per 1000 in the three preceding weeks, rose to 18·3 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 14·9, against corresponding rates of 12·3 and 13·6 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 20·4 in Dublin (against 14·6 in London and 15·2 in Glasgow), 16·2 in Belfast, 17·7 in Cork, 13·9 in Londonderry, 20·3 in Limerick, and 26·6 in Waterford, while in the 21 smaller towns the mean rate was 18·1 per 1000.

The 426 deaths from all causes were 45 in excess of the number in the previous week, and included 72 which were referred to the principal epidemic diseases, against numbers increasing from 39 to 61 in the three preceding weeks. Of these 72 deaths, 60 resulted from infantile diarrhœal diseases, 5 from whooping-cough, 3 from enteric fever, 2 from scarlet fever, and 1 each from measles and diphtheria, but not one from small-pox. The mean annual death-rate from these diseases was equal to 3·1, against corresponding rates of 2·8 and 1·8 per 1000 in the English and Scotch towns respectively. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 30, 44, and 45 in the three preceding weeks, further rose to 60 last week, of which 30 were registered in Dublin, 14 in Belfast, and 5 in Cork. The deaths attributed to whooping-cough, which had been 6, 7, and 7 in the three preceding weeks, were 5 last week, and included 2 in Londonderry. The 3 fatal cases of enteric fever, which occurred in Dublin, Belfast, and Limerick respectively, were slightly in excess of the average in recent weeks. The deaths from scarlet fever and diphtheria were registered in Belfast and the fatal case of measles in Dublin.

The deaths referred to diseases of the respiratory system, which had been 41, 48, and 47 in the three preceding weeks, were 49 in the week under notice. Of the 426 deaths from all causes, 121, or 29 per cent., occurred in public institutions, and 10 resulted from violence. The causes of 20, or 4·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 English towns the proportion of uncertified causes did not exceed 0·6 per cent.

Correspondence.

"Audi alteram partem."

EVOLUTIONARY ETIOLOGICAL FACTORS IN DISEASE.

To the Editor of THE LANCET.

SIR,—Stress of work has prevented me from replying sooner to Dr. J. T. C. Nash's interesting letter in THE LANCET of Sept. 4th. My sole reason for commenting on his previous one was the conviction that it is inexpedient in the present stage of prevention to utilise merely suggestive considerations against the thesis that certain infectious diseases are individual in origin. Much is at stake in the challenge. There was in the past too ready a tendency to refer infections of the kind to extra-human sources when their causation remained obscure, but a change of outlook has now more definitely centred attention on case-to-case and carrier-to-case transmission, an attitude predicating the maintenance of specificity despite continued passage and discounting, in particular, the importance of facultative saprophytism. To introduce a disturbing current of theory into this later trend of practical prophylaxis can, in my opinion, only be justified by far more tangible data than appear available from Dr. Nash's statements.

Having said so much, one is compelled to refer to the substance of Dr. Nash's letter. In the first place I trust he will not regard as hypercriticism the remark that the doctrine he primarily attacks with such emphasis is not the one I carefully defined. That pathogenic bacteria are subject to evolution and regression, and may have had common ancestors, saprophytic or parasitic, and in any case that they probably originated from saprophytes, are views one can consistently associate with a denial that there is any material evidence pointing to a common bacterial source in the present for two or more of the infectious diseases I indicated; and the belief that the germs causing the diseases, if bacteria, may still exercise a saprophytic faculty when at large under favouring conditions is compatible with the same reservation, as is also the proposition that habitual saprophytes of our time on occasion manifest some degree of infectivity. In assailing a position not held by me, Dr. Nash goes on to assert that the creation of a special germ for each infectious disease is unthinkable. With the restricted sense in which the term "unthinkable" is used I am in agreement, and on this score it is enough to say that the point would be one for an opponent of Dr. Nash's theory so ingenuous as to accept a fixity of bacterial species following a miracle.

The third paragraph of the letter, when it departs from generalisations which may or may not cover the process calling for demonstration, is, as I read it, directed to prove that a bacterium can, *vid* an artificial saprophytic phase, become sufficiently divergent in its pathogenicity to produce two affections comparable in their difference to two natural diseases of the class indicated. It would be unfair, with a problem so obscure, to take exception to this matter. It is a stepping-stone, if perilous. However, one cannot accept a doubtful parallelism as direct evidence, and the onus of proof still lies with Dr. Nash. The vital general question for him, it appears, is that of present as

against historical differentiation in the case of certain bacteria, a differentiation having stated results; and, without intending discourtesy, I may say that his implications relative to it turn out to be somewhat nebulous on examination. At the outset he states that the change may occur in an "unusual environment," but there is nothing to show whether he has in mind the environment of nature or, again, of the laboratory. One does not know whether he is roundly declaring his theory is true or is merely supporting it as a probability. The diffusion of the issue occurs in the latter part of the sentence in hand; when, speaking of the pathological outcome of differentiation, he proceeds to the words "whether labelled or not by some other specific name of disease." Hence, in case Dr. Nash decides that this letter requires a reply, and to clear away any possibility of misunderstanding, I restate my position. The point I raised concerned, and only concerned, a group of diseases which have become clearly individualised in the mind of clinicians, epidemiologists, and—in some instances—bacteriologists. Their label does not confer specificity on them, but they are regarded as specific on existing evidence, and the label therefore connotes specificity. On the evidence, subject to convincing facts to the contrary which are not forthcoming and may never come forth, I hold—and believe it to be generally held—that the difference between them is specifically maintained; that they are caused by germs which never become converted one into another. Further to clarify the issue a list of such diseases is added here: cerebro-spinal fever, chicken-pox, diphtheria, influenza, measles, mumps, rubella, scarlet fever, small-pox, typhoid fever, and typhus.

Within the above group Dr. Nash puts what, from his standpoint, is perhaps a contrary instance, in that he mentions a subtle link between diphtheria and scarlet fever. At first sight the instance appears irrelevant as belonging to the past; but the implication of the term "ancestral" in respect of its incidence in time is uncertain when other parts of the letter are weighed. Dr. Nash wonders if my experience has led me to conceive the possibility of the link. As to its abstract possibility, one can say no more than that some of the mentioned diseases possess features which may denote a kinship of their germs. But, regarding Dr. Nash's particular link in the light of a suspected actuality, present or recently historical, there is nothing in my clinical or bacteriological observations that lends the theory any colour. And his presentation of it carries one no further; indeed, it is so conditional that its point is lost in surmise.

Another diffusion of my thesis follows in a reference to the organism of erysipelas as held "by some" to be specifically individual. This preludes a notice of a case of spreading cellulitis caused by the staphylococcus aureus. The implication is, however, astray. For if simulation is brought into the argument, it tells against Dr. Nash's theory in so far as the latter is germane to our subject. We are engaged with present common origins *versus* present individual origins, and for the quoted case to support Dr. Nash's idea the organism at work would have to be the streptococcus of erysipelas. Also, the streptococcus would have, in another phase, to be the staphylococcus aureus, and proof would be required that conversion from one to the other had occurred. This example, as analysed, brings home the quality of a final implication, or rather group of implications, contained in the ensuing words: "Suffice it to say, that in my view when once a saprophyte has evolved into a pathogenic bacterium its perpetuation as a disease-producer of constant character, such as, say, typical scarlet fever or typical diphtheria, depends chiefly on the constancy of environmental conditions." Which is a far cry to the theory of common origins—and a cry that may very well lead away from it.

A general element of uncertainty in Dr. Nash's letter remains for mention as affecting more than one implication. The context reveals two aspects of his theory. In place, firstly, of a micro-organism causing diverse diseases by a change of its pathogenic quality either while continually parasitic or while passing through a saprophytic stage, it might, secondly, be that differentiated organisms were derived in the present from a common saprophyte by a process of branching. Dr. Nash seems to visualise both aspects, but does not distinguish definitely between them. Fraught as the theory of common origins is with revolutionary changes in the outlook of preventive medicine, if Dr. Nash can prove his case it will stand as one of the great medical discoveries in our time; but one has to confess that one sees little beyond hazards in his present evidence.

I am, Sir, yours faithfully,

Wimpole-street, W., Sept. 27th, 1915. JOHN BIERNACKI.

A "NEW SIGN" IN PULMONARY DIAGNOSIS.

To the Editor of THE LANCET.

SIR,—Dr. Albert Abrams has found a very zealous advocate in the person of Dr. A. G. Auld, whose letter appeared in your issue of Oct. 2nd, but the latter has not brought forward any real evidence in support of his contention that "the area or areas of dullness depicted by Dr. Riviere correspond exactly to that depicted by Abrams," nor has he quoted any work of that author which goes beyond the facts stated in my letter of Sept. 11th. The quoted reference of Abrams to apical pulmonary collapse in the healthy is in no way germane to the issue. This condition has long been familiar to most students of chest disease—attention was directed to it by the late William Huggard in 1905, and it was again belaboured by the writer of this letter a couple of years later[1]; it is very possible that it was recorded by Abrams before these dates (I do not know), and doubtless by others before him. But this apical collapse is a one-sided, accidental affair of varying amount and distribution, and cannot be held by those familiar with chest work to bear any resemblance to the symmetrical bands described by myself. Again, the quotations given by Dr. Auld to show that Abrams could produce his reflex over both lungs at once by percussion of the vertebral spines, and that the "dullness may be elicited in practically any chest region by using a plessor and pleximeter" in no way show him to have demonstrated the symmetrical posterior bands described in my paper.

Dr. Auld then tries to expand Abrams's "25 cent to a dollar or even larger" sized "atelectatic zones" at the scapular angles so as to make them cover the lower band of impairment in my diagrams. But it is difficult to establish the identity of two circular areas of, at most, 3 or 4 square inches each with a parallelogram covering

[1] THE LANCET, vol. i., 1907, p. 1603.

some 27 square inches area. Even the well-recognised impairment of the fifth dorsal spine, with "the dullness extending for a short distance on either side," dullness which Dr. William Ewart[3] depicts as an area about one square inch in size, can hardly be said to suffice, when thrown into the scale, to fill the discrepancy between the two dissimilar things Dr. Auld would make to "correspond exactly." Furthermore, it must be insisted (pending any quotation to prove the contrary) that these areas of Abrams's, unlike in size and shape to the areas described by me, are unlike also in their nature, since they are described by Abrams as "atelectatic zones" present in the chests of certain healthy persons, without any claim on his part to their participation in the "pulmonary reflex of contraction." In the light of these facts I think it must prove difficult to discover any identity between the posterior bands of impairment described in my paper and any areas mentioned in "Spondylotherapy" and such other works of Abrams's as are known in this country.

I am, Sir, yours faithfully,

Queen Anne-street, W., Oct. 2nd, 1915. CLIVE RIVIERE.

CRYOGENINE.

To the Editor of THE LANCET.

SIR,—In your issue of August 14th there appeared a very interesting, and I would like to add philosophic, article by Dr. Harrington Sainsbury on Symptoms and Antipyretic Treatment. In it he brings forward his own clinical experience, besides quoting that of others, on the use of cryogenine as a helpful and valuable antipyretic in the treatment of the febrile phthisical patient. I would like to add my own testimony to that of Dr. Sainsbury as regards the action of the drug based on my own personal experience and use of this drug in a large number of cases for several years. At the Royal Hospital for Diseases of the Chest, where cryogenine has been used since 1905, I have learnt to place full trust in its efficacy as a valuable antipyretic. I usually order it to begin with at 3 P.M. in 5–7 grain doses so as to anticipate the usual evening rise of temperature at 6 P.M. or thereabouts. If this single dose is not sufficient to reduce the temperature in a few days, I then order 5 grains of the drug to be given three times a day in the 12 hours—this is usually effective in its result. I can further confirm Dr. Sainsbury's statement that I have never seen any bad result or unpleasant symptoms following its use during the whole time I have used it—quite the reverse, in fact, as it usually benefits the patient by reducing his temperature and so brings ease to *dis*-ease. Like Dr. Sainsbury, I have been much surprised that this useful antipyretic is apparently so little known and used in England.

I am, Sir, yours faithfully,

ARTHUR T. DAVIES, M.D., F.R.C.P.,
Senior Physician to the Royal Hospital for Diseases of the Chest, City-road.

Sept. 29th, 1915.

THREE-PLY WOOD FOR SPLINTS.

To the Editor of THE LANCET.

SIR,—In these times of scarcity of skilled labour, any device which will enable comparatively unskilled persons to make efficient surgical appliances is worthy of record, and I therefore offer no apology for drawing the attention of surgeons to the advantages of three-ply wood as a material for splints. This substance consists of three very thin layers of tough wood which are superimposed, so that the grain of the middle layer runs at right angles to that of the two outer ones. The three layers are then cemented together under pressure. The resulting material is very strong for its weight, has no tendency to warp, and can only be split with great difficulty. It is made of various thicknesses, of which I have hitherto used three—namely, 1/10th, 1/8th, and 1/5th of an inch. Owing to the absence of any tendency to split, windows may safely be cut in the splints in order to allow access to wounds. After softening the wood by soaking it in hot water, it can be bent into any moderate curve, but naturally it is easier to mould the thinner varieties than the thicker. It must be held in the desired shape during drying by bandaging or other means, after which the curve becomes fixed and there is no tendency to spring back.

For many of the smaller splints, such as those for the forearm, even when windows are cut, no reinforcement is necessary if they are made of the 1/5th inch stuff, but when using the more easily bent thinner material, or making longer splints, it is wiser to strengthen them by nailing a strip of wood ¼ in. by 3/8 or 3/8 by ¼ in. along either edge, or wherever it may seem to be needed. Small half-inch brass tacks, which do not rust and can be easily clinched, are very suitable for this purpose. A number of these splints have been and are in use at the Royal National Orthopædic Hospital in the treatment of wounded soldiers, and have given satisfaction on account of their strength and lightness. This latter quality makes them acceptable to patients and also less likely to shift their position. The cost of a square yard of three-ply wood is about half-a-crown. Out of this 24 forearm splints can be cut, each costing for materials, including nails and strengthening strips, not more than 1½*d*. Adjustable jointed splints are made of the same material with the addition of metallic hinges of various kinds, such as will readily occur to anyone of a mechanical turn of mind. Of course, these splints cannot be sterilised by boiling, but if they are given a coat of shellac varnish they will not absorb discharges and they can easily be cleaned with cold water and soap.

I am, Sir, yours faithfully,

Seymour-street, W., Oct. 4th, 1915. E. MUIRHEAD LITTLE.

*** Mr. Muirhead Little's advocacy of three-ply wood for splints is timely. The advantages of the material have been recognised by others, but it is well that they should be as widely known as possible.—ED. L.

TREATMENT OF SCORPION STINGS.

To the Editor of THE LANCET.

SIR,—In reference to Sir Lauder Brunton's suggestion conveyed in your issue of July 24th, that permanganate of potash be used in scorpion stings, I am able to give a certain amount of information on the subject. Some time prior to 1886, in trust of Sir J. Fayrer's experiments, I added to my surgical pocket-case a glass tube of permanganate of potash as a protection to myself and others against snake-bite. During the rest of my service in India, this remedy was therefore constantly at hand in camp and at headquarters. Having regard to the fact that chemical action was trusted to, it seemed to me a legitimate deduction from Sir J. Fayrer's experiments that it would also be useful against scorpion virus, and I may safely say that this remedy was, in the course of years,

[3] Brit. Med. Jour., 1912, vol. ii., p. 967.

used for dozens of cases by myself or wife. As an instance of the long use of my method, I may state that in an editorial review of Dr. Vincent Richards's "Landmarks of Snake Poison Literature" in the *Madras Mail* of Jan. 13th, 1886, it is referred to.

The procedure was to tie a ligature above the part as in snake-bite, make an incision into the skin through the point struck by the scorpion sting, cause the blood to exude by squeezing, and then insert the permanganate of potash. If, as most frequently was the case, the part stung was the hand or foot, the next step was to soak the whole member until symptoms subsided, in a strong (depth of colour only trusted to) and warm solution of permanganate of potash. Staining of the skin was of little moment to the Indian subjects treated.

The method always seemed to me, and the subjects treated, most satisfactory; but the action of the scorpion virus differs so greatly upon different individuals (varying from slight local to diffuse pain, prostration, and clammy sweat) that I found it at times difficult to draw the line between psychological suggestion and chemical treatment. Moreover, there are scorpions and scorpions, and the pain and prostration caused by no means have a relation to size. For example, at Owk, in the Kurnool district of the Madras Presidency, there is a particularly small mud-coloured scorpion, which was the subject of official investigation and is reported to cause collapse and, rarely, death of human beings. In one instance, where the subject was a fragile female suffering great pain and quick relief was required, this was attained by freezing the part with an ether spray—the idea being to secure slow absorption of the poison.

In the same manner as for scorpion stings I have used, with rapid benefit, permanganate of potash for an exceedingly painful sting caused by a fresh-water fish. I am, Sir, yours faithfully,

W. G. KING,
Hatch End, Middlesex, Oct. 4th, 1915. Colonel, I.M.S. (ret.).

THE FUNCTIONAL DISORDERS OF THE VEINS.

To the Editor of THE LANCET.

SIR,—In my previous letters I endeavoured to show (1) that local vaso-motor cyanosis is due to spasm of the venules, and (2) that a similar spasm may play a part in the production of general cyanosis. Captain Gordon Ward, in his letter in your issue of Oct. 2nd, concedes the first conclusion, but demurs at the second. He urges, in regard to the passage—

> ..... How are we to explain the fact that a hand affected by vaso-motor cyanosis tends to remain cyanosed when raised? or the fact that a localised cyanosis of the nose, lips, or ears persists when the head and trunk are erect? How, except on the assumption that the blood is imprisoned in the transparent vessels of the skin by spasm of the vessels distal to them?—

that "a local cyanosis of the nose, lips, or ears," persisting in the erect posture, need not necessarily be due to venular spasm, seeing that cyanosis presenting these features may occur when (as in sulphæmoglobinæmia) the blueness is certainly due to blueness of the arterial blood. This fact, interesting though it be, does not, however, invalidate any of my arguments. In the passage quoted I refer (as will be seen by the context) to cases of genuine *localised vaso-motor cyanosis*, cases in which the arterial blood is certainly red. That the hands may be blue when the lips are red all will agree, but it is also quite common for the lips (and other parts of the face) to show a temporary blue tint when other regions, such as the finger-nails and the palms of the hands, are pink. I submit that such cases can only be explained by postulating a spasm of the venules.

The interesting fact brought out by Captain Ward that the cyanosis which results from blueness of the arterial blood may be strictly limited in its distribution is only what one might expect. The colour of the blood, be it red or blue, does not show through the skin at all unless it is brought to the surface in sufficient quantity. In some people the normal redness only shows in certain regions, such as the lips and the nails, and if in a member of this class the arterial blood became blue the cyanosis would be limited to the same regions.

I am, Sir, yours faithfully,
Wimpole-street, Oct. 3rd, 1915. HARRY CAMPBELL.

PLUMBISM FROM UNUSUAL SOURCES.

To the Editor of THE LANCET.

SIR,—In the interesting communication by Dr. Arthur J. Hall in your issue of Oct. 2nd attention is again called to the frequency with which plumbism is missed. No doubt this usually depends on inexperience, and in most cases the real nature ought at least to be suspected. But I have met with instances in which the symptoms were very vague; the blue line had to be looked for very carefully, and even then in some cases its presence was doubtful. Such a case I have treated for some time as acute rheumatism, until the onset of abdominal symptoms compelled me to consider what was likely to cause colic in spite of milk diet and rest in bed. A few years ago I was present at a clinical demonstration on a case that had been sent in to a London hospital as alcoholic neuritis. The patient, a charwoman, complained that for some time she had been too weak to manage her work. She looked a little anæmic, and there was loss of power both in her arms and legs. There was no blue line. But the woman denied alcoholic excess and declared that she drank very little. For this reason and no other the experienced physician in charge of the case decided to treat her for lead poisoning, although at first he accepted the diagnosis of alcoholism. After the demonstration I suggested that a blood examination might supply the evidence required to confirm his diagnosis. This proved to be correct, as the only abnormality reported was that a few of the red cells exhibited distinct punctate basophilia.

The object of my letter is to point out that in cases of plumbism where the symptoms are vague, the source of poisoning obscure, and confirmatory analysis of secretions difficult to obtain, simple examination of a blood film may quickly yield valuable evidence.—I am, Sir, yours faithfully,

Ealing, W., Oct. 5th, 1915. ROBERT CRAIK.

BREATHING AND PHYSICAL EXERCISES FOR USE IN CASES OF WOUNDS IN THE PLEURA, LUNG, AND DIAPHRAGM.

To the Editor of THE LANCET.

SIR,—In regard to Mr. Cortlandt MacMahon's article in THE LANCET of Oct. 2nd, I should like to say that I for one am so convinced of the benefit derived by this class of case from the exercises Mr. MacMahon there describes that I make a point of enlisting his help in every case of impaired thoracic movements which comes under my care. I am, Sir, yours faithfully,

Portland-place, W., Oct. 4th, 1915. ALFRED D. FRIPP.

The War.

THE CASUALTY LIST.

THE following names of medical men appear among the casualties announced since our last issue:—

Killed.

Captain A. E. Bullock, R.A.M.C., 4th Middlesex Regiment, was educated at St. Paul's School, and entered St. Mary's Hospital in 1908.

Lieutenant K. Robinson, M.B., R.A.M.C., attached to the 12th Manchester Regiment, was in practice at Llandudno before joining the Royal Army Medical Corps.

Lieutenant E. Faulks, R.A.M.C., was a former house surgeon at Guy's Hospital, and before joining the Royal Army Medical Corps was senior assistant medical officer at Bexley Asylum, Kent.

Captain E. W. Carrington, R.A.M.C., attached to the 2nd Battalion Worcestershire Regiment, was educated at Marlborough and Keble College, Oxford, and was awarded the Military Cross last February.

Died.

Lieutenant E. D. Parsons, R.A.M.C., who was previously in practice at Wimbledon.

Captain G. W. Buxton, R.A.M.C., 2nd South Midland Mounted Brigade Field Ambulance (T.F.), was in practice at Fenny Stratford before the war.

Wounded.

Captain H. K. Ward, R.A.M.C., attached to the 2nd Battalion King's Royal Rifle Corps.

Captain H. M. Pope, R.A.M.C., attached to the 1st Battalion Royal Welsh Fusiliers.

Lieutenant C. T. Bishop, M.B., R.A.M.C., attached to the 8th Gordon Highlanders.

THE HONOURS LIST.

The Military Cross, in recognition of gallantry and devotion to duty, has been conferred upon—

Captain Ernest Cotton Deane, R.A.M.C., attached to the 2nd Leicester Regiment.

For conspicuous gallantry on August 22nd, 1915, near Fauquissart. A standing patrol 120 yards in front of our line was bombed by the enemy at about 10 P.M., the only notification being two loud bomb explosions. Captain Deane, without any knowledge of the enemy's strength, at once got over the parapet and ran by himself to the spot under rifle and machine-gun fire. Finding four wounded men he returned for stretchers and got them back into safety. This is not the first time that Captain Deane's gallantry under fire has been brought to notice.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men are to be added to our lists of those who have fallen during the war:—

Lieutenant-Colonel H. D. Collison-Morley, London Regiment, son of the late Dr. J. L. Collison-Morley, medical officer of St. Paul's School, London, E.C.

Second Lieutenant M. L. Greenhalgh, King's (Liverpool) Regiment, youngest son of the late Mr. T. Greenhalgh, M.R.C.S., L.R.C.P.

Lieutenant A. W. B. Carless, Middlesex Regiment, elder son of Professor A. Carless, M.B., M.S., F.R.C.S., Major R.A.M.C., of Wimpole-street, London, W.

Captain A. E. Bullock, R.A.M.C., Middlesex Regiment, elder son of Dr. J. E. Bullock, of St. Leonards-on-Sea.

Second Lieutenant D. J. R. Wilson, elder son of Dr. J. Wilson, of Haverfordwest, Pembrokeshire.

Lieutenant G. E. Tracey, 9th Devons, eldest son of the late Dr. H. E. Tracey, of Willand, Devon.

Second Lieutenant R. B. Whyte, 1st Black Watch, fourth son of Dr. A. Whyte, of Charlotte-square, Edinburgh.

Captain C. Nelson, 3rd Brahmans (attached to the 69th Punjabis), eldest son of Dr. E. F. Nelson, of Downpatrick, co. Down.

Captain G. Wilson, Wilts Regiment, son of Mr. M. S. Wilson, M.R.C.S., of Chippenham, Wilts.

Second Lieutenant B. U. Hare, 1st Middlesex Regiment, youngest son of Mr. E. H. Hare, F.R.C.S., of Hornsey, London, N.

Second Lieutenant E. F. Gillett, eldest son of Dr. J. F. Gillett, of Andover.

Second Lieutenant L. Hopkins, 8th Somerset Light Infantry, youngest son of the late Surgeon-Major N. Hopkins, Indian Medical Service.

Lieutenant H. J. Moran, 8th Gurkhas, son of the late Colonel H. J. Moran, Indian Medical Service.

Captain H. T. Allen, 9th Seaforth Highlanders, youngest son of the late Brigade-Surgeon W. E. Allen, F.R.C.S., Bengal Army.

Second Lieutenant K. S. Dunlop, 4th Battalion South Staffordshire Regiment, youngest son of Dr. A. Dunlop, of Jersey.

Captain E. F. Myddelton-Gavey, 2nd Battalion (attached to the 4th Battalion) Worcestershire Regiment, only son of Surgeon-Major E. H. Myddelton-Gavey, R.A.M.C.

Second Lieutenant C. D. N. Lawson, 8th Battalion West Kent Regiment, second son of Dr. H. Lawson, of Chislehurst.

Lieutenant R. D. Cameron, 6th Cameron Highlanders, second surviving son of Lieutenant-Colonel C. S. Cameron, Indian Medical Service (retired).

Second Lieutenant W. H. W. Moore, 6th Wilts Regiment, son of Dr. J. S. Moore, of Swindon.

Captain J. H. A. Ryan, 1st Liverpool Regiment, younger son of Dr. W. H. Ryan, of Roade, Northampton.

Second Lieutenant E. H. N. Cordeux, 7th Battalion Sherwood Foresters, only son of the late Dr. R. H. Cordeux, of West Bridgeford, Nottingham.

We are glad to learn from Lieutenant-Colonel C. E. Humphreys, R.A.M.C., that the official announcement of the death of his son, Lieutenant R. M. Humphreys, 7th Royal Welsh Fusiliers, is incorrect, and that Lieutenant Humphreys, who has arrived home wounded and suffering from dysentery, is progressing favourably.

THE DIAGNOSIS OF TYPHOID AND PARATYPHOID INFECTIONS.

With a view to the convenience of bacteriologists at military hospitals, and the coördination of results obtained by different observers at different times and places, the Medical Research Committee have made arrangements for the preparation and supply of sterilised standard agglutinable cultures and standard agglutinating sera, for the diagnosis of typhoid and paratyphoid infections by means of macroscopic agglutination tests. The standard cultures and sera for B. typhosus, B. paratyphosus A, and B. paratyphosus B will be prepared in the Department of Pathology, Oxford, under the direction of Professor Dreyer, and they will be supplied by the Medical Research Committee free of charge to pathologists working in connexion with military hospitals. Applications for the standard cultures or sera should be addressed to the Standards Laboratory, Department of Pathology, University of Oxford (telegraphic address, "Pathology, Oxford"; telephone, Oxford 467).

To facilitate the performance of agglutination tests under service conditions or otherwise, a special outfit has been prepared. This consists of a special stand, dilution tubes, agglutination tubes, and two dropping pipettes, which can be obtained free of charge by pathologists working for military hospitals upon application to the Medical Research Committee, St. Stephen's House, Westminster, S.W., or may be purchased from Messrs. Baird and Tatlock, 14, Cross-street, Hatton Garden, E.C., price 4*s.* 6*d.* each set. Full directions for use will be sent out with each set. In these directions details

will be given which will enable bacteriologists in suitably equipped laboratories to prepare their own killed agglutinable cultures and to standardise them against the standard serum issued. But where such facilities are absent, and under service conditions generally, standard agglutinable cultures will be supplied in quantities sufficient for all ordinary routine work. When application is made for standard cultures the probable weekly number of agglutination tests to be made should be stated.

The standard agglutinating sera for B. typhosus, B. paratyphosus A, and B. paratyphosus B will be provided either for the identification of these several forms or for the purposes of comparison with any given killed agglutinable cultures. The use of the standard agglutinable cultures, with the set of apparatus as provided, is believed to offer the following advantages: 1. The procedure is simple and rapid. 2. The materials are always ready, and no cultures have to be incubated and prepared. 3. The culture is killed and all risk of infection is absent. 4. The reaction can be carried out at any temperature between 35° C. and 56° C., or even at room temperature if necessary. 5. No microscope is needed. 6. The killed cultures are as sensitive to agglutinins as are fresh living cultures, or even more sensitive. 7. Owing to the precise quantitative determination which it allows, the method enables the worker to follow the course of the agglutination curves obtained by successive examinations, and thus facilitates the differential diagnosis between agglutination due to inoculation and that due to active disease. 8. The results obtained possess standard uniformity even in relatively unpractised hands, and are strictly comparable from case to case and from day to day wherever the tests are performed. The expression of the results in standard agglutinin units will allow the comparison of extensive series of observations in different laboratories and at various times for statistical or other purposes.

The methods proposed and the standardised cultures and sera provided are already in use at the chief military laboratories engaged in work upon enteric fever cases and carriers, both with the Expeditionary Force and at home. It is hoped that in the interests of the unification of records the standards now made easily available may be generally adopted.

WAR EMERGENCY COMMITTEE.

A letter signed by the Committee, calling the attention of the public to the need for its sympathy and assistance in setting free medical practitioners for service with the forces, has been published in a number of lay papers. The letter indicated that the shortage of commissioned medical officers in the new armies can only be made good by releasing medical practitioners from civil life, who, it was pointed out, are dependent on their practices for their livelihood. "At the call of duty they go to assist in saving the lives and relieving the sufferings of their countrymen, and in so doing they risk not only death and injury but also the loss of their means of livelihood on their return." The War Emergency Committee clearly recognised the right of every person to consult any doctor he chooses, but appealed to all British citizens not to give up their usual medical attendant on account of his temporary absence on military duty, while to insured persons a request was made not to apply for transfer. "In all cases," said the letter of the Committee, "it should be regarded as an obligation and patriotic duty to safeguard in every possible manner the interests of the doctors who volunteer for active service."

The advice or instruction of the Committee to the public is as follows: "Patients should inform the practitioner they may consult if their own doctor is absent on military service, and that they intend to place themselves again under his care whenever the need arises after his return. The medical men who remain are willingly attending the patients of those on service on the distinct understanding that they shall not be asked to continue to do so after the war. The public will assist these men greatly to fulfil this honourable understanding if it will observe the lines of conduct we have indicated."

The following letter, received from an officer in the Royal Army Medical Corps, sufficiently shows the necessity of approaching the public. The writer is speaking from practical experience.

> The present methods of dealing with the private practice of civilian doctors who take temporary commissions in the R.A.M.C. are not satisfactory. From all I can hear, besides my personal experience, whether the absentee's colleagues do his work gratuitously or accept half the fees, the result is the same. A large proportion of patients fail to disclose the fact that they are patients of the man on active service, and thus drop out of the returns. In many cases the suppression of information is deliberate, and no doubt actuated by the hope of getting better attention. The result is that the absentee's returns from his private practice diminish quarter by quarter to the advantage of his colleagues who elect to remain behind. The remedy is simple: the country should be plotted out into districts and a levy should be made on the general practitioners of each district to the extent of half the income of each man on service. Unless this is done soon there will be increasing reluctance on the part of men to do their duty to their country.

The difficulties of the War Emergency Committee in obtaining for the Army Medical Service the number of doctors with the army which Sir Alfred Keogh has stated to be absolutely necessary will be much accentuated by the feeling, accurate or no, that the interests of those who obey the call to arms are not cared for by their colleagues or the public. The voluntary conscription of medical men continues, and the necessity for safeguarding the public interests, before the point of depletion is reached in any area, has been brought to the attention of the War Emergency Committee by the National Health Insurance Committee.

VACANCIES FOR MEDICAL OFFICERS.—Two medical officers are urgently required for service with the 2nd Line, Shropshire Royal Horse Artillery and Cheshire Yeomanry. Pay and allowances as in the Regular Army, also outfit and camp kit grants. Full particulars can be obtained on application to Lieutenant-Colonel D. C. Leyland Orton, senior medical officer, 2nd Line, Welsh Border Mounted Brigade, The Camp, Morpeth, Northumberland.

Three medical officers are required for the 2/1st Eastern Mounted Brigade Field Ambulance, R.A.M.C.(T.F.). Medical officers will be required from this unit for service overseas. Applications should be made to the officer commanding, Major C. E. Kaye Sharpe, at Tadworth Camp, Epsom.

FOOD IN WAR TIME.—On Oct. 4th, at the Hampstead Central Library, Professor D. Noel Paton, professor of physiology in the University of Glasgow, commenced a series of three public lectures, under the auspices of the Chadwick Trust, on the subject of Food in War Time. A large gathering was presided over by the Mayor of Hampstead, Councillor O'Bryen.

The initial lecture dealt with food and the physiological process of its conversion into energy. At the present time, said Professor Paton, there were many panaceas born of impulse, but the true reformer must wait until real knowledge had been acquired; and one of the purposes of these lectures was to assist in the attainment and diffusion of such

knowledge. His object was not to entertain, but to assist his audience in grasping the use of food and the mode of its utilisation, as well as the special function of particular ingredients, so that they might have sure means of determining what foods were most valuable, and avoid less good foods, even though they might be presented under cover of specious advertisement. The physiologist must say what was wanted: with the economist must rest the decision as to how best it could be supplied. To the working classes this had always been a vital question; the enhanced prices of food in war-time simply rendered the question more acute. Perhaps this time of stress was not without its benefit in that it forced the populace to face the question as to what was the true use of food. A study of the effects of fasting afforded much light on the uses of food. A man, provided he had enough water for his needs, could live 40 days without taking solid food. After the first few days there were no pangs of hunger. In laboratories men frequently fasted for short periods, and all agreed as to the absence of pain; and during the winter's fast which many animals underwent their sufferings were probably much less than was popularly supposed. A man whom he had been observing during a 30-day fast ate at the termination a record meal without any ill-effect, and during his fast he developed a typical attack of gout in the great toe. In the case of the majority of mankind life was one long struggle to obtain a sufficient supply of food; people worked to obtain food, and ate food in order that they might work, and it was this hunt for food which was responsible for the development of skill and cunning, the prime factor in all processes of evolution. In evolution there was not so much an advance to some ideal perfect type, but an adaptation along certain lines to suit the body to its environments.

He proceeded to state, in a popular light, the comparison of the human body with an engine or machine. Under favourable conditions the body was capable of giving off as mechanical work one-third of the energy-value of the food ingested: in that respect a much more effective machine than the steam engine. The body also did its internal repairs, and during earlier years increased in size. The highest efficiency was when growth had ceased, and all the energy not required for repair or for making good heat loss was available as work. Those most important bodily structures, the muscles and nerves, were very complex, consisting mainly of proteins, whose constituents—amino acids—were only recently discovered after long years of baffling research. The proteins of different animals and of vegetables were found to have varying proportions of these amino acids, and by taking a variety of foods a reservoir was presented from which the bodily needs could be satisfied. Fat was a valuable food; it consisted of carbon, hydrogen, and oxygen, but very little of the last-named; therefore, when fat was burned or oxidised it demanded a large access of oxygen for the process, hence a large amount of energy was evolved. An ounce of fat was found to yield more than twice the energy given off by the same weight of sugar or starch. Some men of 11 st. had 20 lb. of fat stored in various parts of the body. The muscles of man formed about 45 per cent. of his total body weight and made a constant demand for food; by their activity the temperature was maintained.

The lecture concluded with a description of the mode of investigation carried out by Atwater and Benedict by the use of their elaborate respiratory calorimeter, of the meaning of the term calorie, as well as the gradually increasing food requirements according to the degree and kind of work done and according to the age period. The lecture was illustrated by a number of slides. The second and third lectures will be delivered at the same place on Oct. 11th and 18th respectively.

CONCERTS FOR WOUNDED SOLDIERS IN EDINBURGH.—The committee recently formed under the patronage of Lord Provost Inches, Provost Malcolm Smith (Leith), Field-Marshal Sir John French, and Lady Dunedin for the purpose of providing concerts and entertainments for wounded sailors and soldiers in military camps in Edinburgh and district have, under the chairmanship of Councillor Macfarlane, J.P., already given six concerts, the following places having been visited: Royal Victoria Hospital, Deaconness Hospital, Marchall-road and Kingsknowe Convalescence Hospitals, and Malleny and King's Park military camps. In order to continue these concerts through the winter the committee have arranged to hold a flag day on Saturday, Oct. 30th, to provide the necessary funds.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the First Professional Examination for the Licence in Dental Surgery held on Sept. 27th and 28th the following candidates were approved in the undermentioned subjects:—

Mechanical Dentistry and Dental Metallurgy.—Cyril Charles Becker, Richard Lawton Cowley, John Eskdale Fishburn, Frederick George Pritchard Flanders, Ivan Jephson Gardiner, and Horace Oliver Irwin, Guy's Hospital; Cyril Bernard Marsh, Manchester University; Archibald Felix Percy, Guy's Hospital; Vera Elsie Marie Sturridge, National Dental Hospital; Sydney Granville Townley, Guy's Hospital; and George William Wilson, Royal Dental Hospital.

Mechanical Dentistry.—Douglas William Smale Adams, Guy's Hospital; Harold John Allen, National Dental Hospital; Hubert John Vere Raywood Allin, Birmingham University; Cyril Arthur Duval Bishop, Guy's Hospital; Leonard Alfred Brown, Royal Dental Hospital; Alfred Joseph Chiappa, National Dental Hospital; Bertram Poole Cousins and Hyman Fox, Guy's Hospital; Santi Freni-Sterrantino, University of Bologna and Royal Dental Hospital; Ralph Byron Gibson, Sheffield University; Florence Goodman, National Dental Hospital; Philippus Elisa Grobelaar, Guy's Hospital; Arthur Robert Hill and Hugh Donald Hoggard, Royal Dental Hospital; John Christopher Johnson, Hugh Llewelyn Jones, Roy Victor Kingham, Felix Reginald Knowler, and John Leslie Lean, Guy's Hospital: Georges Maes, Brussels and Royal Dental Hospital; Harihar Gangadhar Moghe, Bombay University and National Dental Hospital; Edward Alfred Penney Parker, David Errand Robinson, and Ernest Findlay Shaw, Guy's Hospital; Cyril Fryer Smith, Liverpool University; Albert Weinberg, Guy's Hospital; Alfred Williams, Bristol University; and George Wilshere and William Adam Woodward, Guy's Hospital.

Dental Metallurgy.—Albert James Constance, Bristol University; Charles Arnold Rodrigo Goonewardene, Royal Dental Hospital; Jack Kenneth Grayson, London Hospital; Charles Luke Highton, Liverpool University; Walter Samuel Hill, Leeds University; Thomas Sidda Hoyland, Sheffield University; Ernest Wilfrid Jarvis, Guy's Hospital; Herbert Newton Tiplady and James Percival Owen Vallow, Leeds University; and Walter Reginald Wotton, Guy's Hospital.

VICTORIA UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful:—

FIRST M.B. EXAMINATION.

Part I., Inorganic Chemistry and Physics.—Kathleen Doyle, Georgiana M. Duthie, Ellis Pigott, and A. H. Sadek.
Chemistry.—H. D. Preston.
Physics.—Elizabeth C. Davies and J. G. Nolan.
Part II., Elementary Biology.—J. N. Laing, F. L. Pickett, H. D. Preston, and Kime Ratner.

INTERMEDIATE B.SC. EXAMINATION.

Fred Docker, L. B. Jump, William Myers, F. S. Nawaz-Jung, and A. J. Phillips.
Pure and Applied Mathematics.—Arthur Norris.

INTERMEDIATE B.SC. TECH. EXAMINATION.

G. W. Collier, James Lomax, and Cemach Oiserman.
Physics and Chemistry.—S. C. Loo.

FIRST B.D.S. EXAMINATION.

Physics and Zoology.—G. L. Taylor.

DIPLOMA IN DENTISTRY (FIRST EXAMINATION).

R. L. R. Heelan.
Chemistry.—D. M. Barnes, W. G. Harrop, and Frank Torkington.
Physics.—Frank Lewis and Bertram Wilkinson.

DIPLOMA IN DENTISTRY (SECOND EXAMINATION).

Dental Metallurgy.—S. K. Gibson.
Dental Mechanics.—Roland Critchley, Norman Flitcroft, S. K. Gibson, John Green, S. C. C. Jones, Herbert Masters, H. A. Parkinson, George Stirling, and C. H. Travis.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates having passed the requisite examinations of the above board have been admitted Diplomates in Public Health:—

Mary Agnes Beausang Murphy, M.B., B.Ch. Irel.; James Crocket, M.D. Edin.; Wilfrid Samuel Hamilton Campbell, M.B., Ch.B. Edin.; John Carstairs Drysdale, M.B, Ch.B. Edin.; and Kenneth Alexander Maclean, M.B., Ch.B. Edin.

UNIVERSITY OF GLASGOW.—At examinations held recently the following candidates were successful:—

DEGREES OF M.B. AND CH.B.

Medical Jurisprudence and Public Health (Fourth Professional Examination—New Medical Ordinance).—John Alston, Thomas Blackwood, James Prowse Broom, Archibald Campbell Brown, Henry Drummond Brown, John Alexander Buchanan, David Campbell, M.A., B.Sc., David Clyde, Douglas Hamilton Coats, William Kerr Connell, Walter Gow Cook, James Crerar, James Ferguson Duthie, James Ewing, Thomas Gray, Samuel John Henderson, Arthur Robert Hill, Stewart Johnstone, Frederick Colquhoun Logan, Alexander Fisher M'Millan, Frederick Robertson Martin, William Harold Palmer, Robert Rodger, James Steel, John Steele, Abraham Raphael Steinberg, George Carson Swanson, Herbert Watt Torrance, Robert Nisbet Walker, M.A., Robert Smellie Weir, Kenneth John Talbot Wilson, Jean Lawrie Hamilton, Margaret Jane Thorburn Leitch, Mary Ann MacLennan MacLean, Margaret Kay Mitchell, Mary Helen Routledge, and Alison Edgar Wilson.

Medical Jurisprudence and Public Health (Third Professional Examination—Old Medical Ordinance).—Menindra Nath Bhattacharjie, John Williamson Dalglish, George del Pino, Michael Devers, Thomas Ronald Fulton, Theodore Paton Hutchison, William Fulton Kivlichan, M.A., Robert William MacDonald, Douglas Bower M'Intosh, William Watson Morrison, William O'Brien, James Alexander Paterson, Thomas M'Skimming Wilson, Margaret O'Rourke Gallagher, and Mary Scott.

HUNTERIAN SOCIETY.—The hall of the Barbers' Company, where the Hunterian Society was fortunate enough to be permitted to hold its meetings last session, has been temporarily closed. The first meeting of the new session will therefore be held at the house of the Royal Society of Medicine next Wednesday. Dr. Samuel West will deliver the first Hunterian Society lecture on Bright's Disease in Some of Its Clinical Aspects. Any members of the medical profession will be welcome at this, as at any other meeting of the society.

LORD MAYOR TRELOAR CRIPPLES' HOSPITAL AND COLLEGE, ALTON, HAMPSHIRE.—A first medical report has been prepared by the medical superintendent, Mr. H. J. Gauvain, who has been at the hospital since its inception in 1907. The report, with an interesting preface by the Right Hon. Lord Moulton, consists of 60 pages, of which nearly half are reproductions of excellent photographs and skiagrams taken by Mrs. H. J. Gauvain. The ideal of the hospital is: (1) So to increase the patient's powers of resistance that he himself may be made to overcome the disease by which he is attacked and render it innocuous; (2) to preserve and restore any particular bones or joints diseased; (3) to prevent deformity or, if deformity already exists, to correct or reduce this deformity as much as is possible; (4) to educate the patient while he is being treated, if his condition permits; (5) to exercise as far as possible efficient after-care and guidance when treatment in the hospital is completed and the patient is discharged. The report states that tuberculous disease probably causes more crippling than all other diseases combined. Next to spinal caries, tuberculous disease of the hip-joint most frequently demands treatment. Of the 435 cases of hip disease admitted, only one died in the hospital, death being due to septic exhaustion and amyloid disease. At Alton, incision of pure tuberculous abscesses had been abandoned, and aspiration with suitable precautions has taken its place. Not infrequently the pus they contain is semi-solid or caseous. Solid pus cannot be withdrawn through the hollow needle of an aspirating syringe, but the difficulty has been overcome by injecting so-called "modifying fluids," which liquefy the pus *in situ*.[1] This treatment has been attended with the most favourable results. Discharging infected wounds with all their associated discomforts and dangers are almost unknown, and abscesses are safely and speedily healed. The medical superintendent recognises that a method helpful in some cases may be valueless in others, and that no certain mode of cure is yet available which can be applied to all, and adds that with increasing experience the number of hopeless cases is steadily diminishing, but treatment demands untiring patience and calls for much resource. Over 1000 medical men from this country and abroad have visited the hospital, and many have remained to work for varying periods in the wards. It is hoped later to arrange for systematic instruction to medical practitioners and students specially interested in this work. Recently all pus obtained from tuberculous abscesses has been sent to the Local Government Board laboratories for investigation into the type of tubercle, to determine what proportion are infected with tubercle of human or of bovine origin. A simultaneous investigation was made into the value of the quantitative von Pirquet test with both human and bovine tuberculin and the reactions checked by colour photography. The results of this research will be duly published by the Local Government Board. Practically all the patients require splints or other appliances, and it is a source of gratification that not one splint has been bought for use in the hospital, but all have been made on the spot. Splints made of celluloid were introduced into England and popularised at Alton, where, after numerous experiments, it was discovered how to make them non-inflammable by the addition of calcium chloride to the celluloid solution used in their manufacture. In short, the experience gained at Alton has shown: (1) That tuberculous cripples should be treated conservatively but energetically, and for a sufficiently long period, as soon as possible after the onset of the disease; (2) that during treatment their education should be, where possible, efficiently undertaken with special regard to their limitations and requirements; (3) that even the most advanced cases may, in the great majority of instances, be very materially benefited and their deformities either corrected or reduced; (4) that after-care and guidance should be systematically given; (5) and, lastly, that apart altogether from philanthrophic considerations, the thorough treatment of these patients is not only logical and desirable, but economically sound. It is undoubtedly to the advantage of the community to cure and train the cripple, and so convert him from a dependent to a wage-earner and producer. The report states that a special hospital for tuberculous disease of the bones and joints to be economically successful should be large, the larger the better, and adds that there is almost unlimited room for expansion at Alton, and its uninterrupted growth since its foundation leads to the hope that it will continue to enlarge.

[1] These modifying fluids are fully referred to in a paper on the Treatment of Tuberculous Abscesses of Bony Origin written by Dr. Jacques Calvé, assistant surgeon to the Hôpital Maritime, Berck-sur-Mer, and Mr. Gauvain, which was published in THE LANCET of March 5th, 1910.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Joseph William Baxendale the testator left £1000 to the Surrey County Hospital at Guildford.—The late Mr. Walter Whitehead, of Cecil-street, Moss Side, Manchester, has left £1000 to the Northern Counties Supplementary Hospital for Chronic and Incurable Diseases.

FROEBEL SOCIETY.—Two lectures of medical interest are announced by the Froebel Society for Nov. 10th and Dec. 18th, to be delivered at the College of Preceptors, Bloomsbury-square, W.C. The first is by Dr. Greville MacDonald on the Imagination in Education, and the second on the Physical Basis of Mental Deficiency, by Dr. F. C. Shrubsall. A course of lectures will be arranged on the Teaching of Mentally Defective Children. Inquiries, together with a stamped envelope, should be sent to the secretary, the Froebel Society, 4, Bloomsbury-square, W.C.

EDINBURGH ROYAL INFIRMARY.—A meeting of the managers of the Edinburgh Royal Infirmary was held on Oct. 4th, Lord Provost Inches presiding. The contributions for the past week were reported to amount to £2292 18*s*. The following appointments were made for six months as from Oct. 1st:—Resident physician: Mr. Ernest O. A. Singer (final year student) to Dr. F. D. Boyd (for one month only). Resident surgeons: Mr. T. F. Corkill, Mr. John Dick, and Mr. R. L. Impey (final year students) at the surgical out-patient department, and Mr. A. Keith Gibson (final year student) to Dr. A. H. F. Barbour (three months only). Non-resident house surgeon: Dr. M. Burton to Dr. J. Malcolm Farquharson. Clinical assistant: Mr. Harold Chaffer to Dr. Logan Turner (three months only). The following return of patients was submitted: patients in hospital at last return, 871; admitted during the past week, 215; total number treated, 1086; dismissed cured, 157; dismissed relieved, 56; dismissed otherwise, 7; died, 20; total removed, 240; total remaining (757 adults, 89 children), 846; treated as above, 1086. The actual number of new cases treated during the past week at the various out-patient departments was 664, the majority of whom subsequently attended two or three times. In addition to the above there were 73 patients resident at the convalescent home, Corstorphine. The services of Mr. J. G. Cattanach were accepted for the office of temporary assistant physician to the institution.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The following scholarships, medals, prizes, and certificates were awarded during the session 1914–1915:—Broderip scholarships: R. H. Fleming (first), and W. T. Warwick (second). Lyell medal and scholarship and Freeman scholarship: L. G. Phillips. Hetley clinical prize: D. C. Ogilvie. Leopold Hudson prize: J. W. Tudor Thomas. Second year's exhibition: S. C. Shaw. General Medicine: prize, D. C. Ogilvie; certificates, E. H. Lake and F. W. Noble. General Surgery: prize, D. C. Ogilvie. Practical Medicine: prize, W. B. Gabriel; certificate, E. H. Lake. Practical Surgery: prize, T. P. Williams; certificate, J. J. O. Beven. Midwifery: prize, E. H. Lake; certificates, T. P. Williams and F. C. Mason. Practical Midwifery: prize, F. W. Noble. Psychiatry: prize, F. C. Mason and T. P. Williams (equal); certificate, E. H. Lake. Pathology and Bacteriology: prize, F. C. Mason; certificates, T. P. Williams, J. W. Tudor

Thomas, and E. H. Lake. Forensic Medicine and Public Health: prize, F. C. Mason; certificate, E. H. Lake. Pharmacology: prize, H. A. Faulkner. Anatomy: prize, S. C. Shaw; certificate, R. E. S. Webb. Physiology: prize, S. C. Shaw; certificate, R. E. S. Webb. Practical Anatomy: prize, R. E. S. Webb; certificate, A. K. Ince Jones. Histology: prize, A. I. Cox; certificates, E. F. Rabey and A. G. A. Miller (equal). Embryology: prize, E. F. Rabey; certificate, K. L. Singer. Practical Pharmacy: prize, A. I. Cox; certificates, J. Peter, A. G. A. Miller, and R. Wolff. Biology: prize, W. D. Jenkins; certificates, A. R. Hill, R. Owen Jones, J. V. A. Simpson, R. Wolff, A. N. Kingsbury, and E. F. B. Haydon. Organic Chemistry: prize, E. F. Rabey; certificate, J. Powlesland. Inorganic Chemistry: prize, J. V. A. Simpson; certificates, W. D. Jenkins, A. N. Kingsbury, B. Y. H. Christmas, and R. Owen Jones. Physics: prize, W. D. Jenkins; certificates, J. V. A. Simpson, E. F. B. Haydon, and B. Y. H. Christmas. The following scholarships and medals have been awarded recently:—First entrance scholarship: D. C. Muir. Second entrance scholarship: E. W. Riches. Third entrance scholarship: F. S. Coleman. Freer Lucas scholarship: H. M. Royds-Jones. New Zealand scholarship: R. Pulton. Fardon memorial medals: Beatrice Maude Herring (gold), Vera Matheson (silver), and Marjorie Edith Startup (bronze).

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Parliamentary Session.

THE House of Commons has adjourned for a week in order to give time for the adjustment of the text of the Finance Bill.

Taxation of Imported Motor-cars.

The Chancellor of the Exchequer has intimated his decision that the duty of 33⅓ per cent. *ad valorem* on imported motor-cars and motor accessories will not be made to apply to tyres. He has also stated that cars coming into this country to be taken immediately over to France for hospital purposes will not pay. If they are not excluded specifically from the tax they will get the drawback on export in any event. Sir HENRY NORMAN has asked the right honourable gentleman whether he proposes to allow a rebate of the duty upon motor-cars, chassis, and parts imported solely for ambulance or other Red Cross use. Mr. MCKENNA has replied that he is considering this question. A suggestion has been put forward that the duty should be remitted in the case of cars used by the medical profession. It is hoped that Mr. MCKENNA is also giving his attention to the merits of this claim.

HOUSE OF COMMONS.

WEDNESDAY, SEPT. 29TH.

The Organisation of the Insurance Commission.

Mr. HOGGE asked the Prime Minister whether any changes were contemplated in the organisation of the Insurance Commission; and whether the separate existence of the Scottish Insurance Commission was threatened.—Mr. ASQUITH replied: I understand that the organisation of the department as a whole is under consideration by the Retrenchment Committee. Until their report has been received I can make no statement.

Spirit Duty in Hospitals.

Mr. PERCY HARRIS asked the Chancellor of the Exchequer whether he intended to introduce a clause in the Finance Bill to provide the relief from spirit duty promised to hospitals; if not, would he bring it in as a Vote in Supply; and whether, if the latter course was pursued, there would be any delay in the receipt of this relief by the hospitals.—Mr. MCKENNA answered: I propose to submit to the House a Vote in Supply at the earliest suitable opportunity.

Patent Medicines.

Effect has been given to Mr. MCKENNA'S promise to defer the date at which the increased duty on patent medicines becomes payable until Oct. 20th.

THURSDAY, SEPT. 30th.

Hospital Ships Service at the Dardanelles.

Sir H. CRAIK asked the Under Secretary for War whether the arrangements for dealing with the sick and wounded at Gallipoli were entirely under the charge of the authorities of the Royal Army Medical Corps; and whether they had an adequate supply of properly equipped hospital ships for the purpose.—Mr. TENNANT replied: The medical arrangements on land are entirely in the hands of the Royal Army Medical Corps. The transport of the sick and wounded, of course, involves the coöperation of the naval authorities, who have the control over the working of the ships, which is exercised through a naval hospital trasport officer. There are 5 ships regularly engaged on this service, which it is hoped will prove an adequate number, but as an emergency measur other transports can be utilised in addition.

Sir H. CRAIK: Are these ships ordinary transports?—Mr. TENNANT: I think I am correct in saying that 49 of them are hospital ships.

Sir C. KINLOCH-COOKE: Was there an adequate supply of properly equipped hospital ships for landing of troops at Suvla Bay?—Mr. TENNANT: I must ask notice of that question.

Mr. MACMASTER: Is it a fact that the steamship *Arragon* conveyed 1200 men from Gallipoli to Alexandria, a journey of five days, with only two surgeons on board?—Mr. TENNANT: I really should like to have notice of a question like that.

The Case of Surgeon David Vickery.

Commander BELLAIRS asked the Secretary to the Admiralty whether, in view of the admitted facts in regard to the case of Surgeon David Vickery, who was invalided from the navy on a mistaken diagnosis, he would now communicate to him the decision on his claim for the surgical and medical expense in which he was involved, bearing in mind that the grievance was of many months' standing—Mr. MACNAMARA wrote in reply: As an act of grace it has been decided to make a grant of £20.

Treatment of Nerve Shock in the Army.

Mr. TOUCHE asked the Under Secretary for War whether continued hospital treatment was provided for soldiers suffering from nerve disturbance and loss of mental balance in the neurological sections of the 23 military hospitals of the United Kingdom, in which uncertifiable cases of this nature amongst the rank and file were treated.—Mr. TENNANT (in a written answer) replied: Yes, sir, so long as accommodation is available.

Mr. TOUCHE also asked the right honourable gentleman whether Springfield House Hospital, Wandsworth, to which uncertifiable cases of soldiers suffering from nerve disturbance and loss of mental balance were sent, was a block of the Middlesex County Asylum at Wandsworth, and was under the same management as the rest of the institution; whether the rest of the asylum was in use for certified lunatics; whether all the soldiers in the Springfield House block were uncertifiable; whether no civilian could be placed in this position; and, in view of the difficulty of stating at the outset whether a case was curable or not, would he consider the desirability of the provision of hospital treatment for all cases for some time prior to their relegation to buildings associated with lunacy control, and of the acquisition of convalescent homes to be worked in conjunction with the hospitals for the completion of the recovery of such cases.—Mr. TENNANT wrote in reply: The answer to the first three parts of the question is in the affirmative, and to the fourth, that any civilian admitted to the county asylum would have been certified as insane. As regards the fifth part of the question, I may repeat what I have previously stated, that cases are not sent to Springfield House Hospital until after a period of treatment in the neurological section of a general hospital.

Medical Inspection of Children under the Factory Acts.

Mr. KING asked the Secretary of State for the Home Department whether, in connexion with remission of children from school under the Factory Act, 1901, boys and girls have to be inspected by a medical officer under the Home Office; whether this practice had continued, even though medical inspection was now carried on under the local education authorities under their own medical officers; and, if so, whether he would now arrange that medical inspection of scholars should in future be carried out by a single set of officers under one authority.—Sir J. SIMON wrote in reply: The medical examination under the Factory Acts is for the purpose of testing the fitness of the child for employment in a particular factory and imposing any necessary conditions as to the precise kind of employment. The requirement applies to all persons under the age of 16, and the bulk of the examinations take place after the child has left school. The question of linking up this examination with the school medical inspection has not been overlooked, but no change in the requirements of the Factory Acts can be made without an amendment of the Acts, and that cannot be undertaken at present.

Antityphoid Inoculation.

Replying to Mr. CHANCELLOR, who raised on the motion for the adjournment matters involved in the inoculation of soldiers against enteric fever, Mr. TENNANT said that anyone who had knowledge of previous campaigns must admit that sickness and illness, principally enteric fever, had devastated the armies.

Mr. CHANCELLOR: They never had any sanitation.

Mr. TENNANT: They had not sanitation, I am quite free to admit. A free mind brought to bear upon the conditions of the present campaign and of past campaigns must admit that the present campaign had been extraordinarily free from those terrible diseases and that must be put down in a large measure to the advance of science and particularly to inoculation. That was the verdict, not only of the army, but the opinion of the vast majority of people. At the same time, he did desire as far as in him lay to bring to the army in the matter of inoculation that degree of pure voluntaryism which ought to exist and which the Government had enunciated from time to time. It could not be said that it was purely voluntary for a man to be inoculated under some degree of pressure. That was not consistent with voluntaryism.

Mr. CHANCELLOR: That is the point.

Mr. TENNANT: My answer to that is that the bulk of the evidence certainly in the army goes to show that inoculation is a preventive against enteric fever. The view was that the men who did not undergo inoculation were a danger to their fellows. If that was believed, how could an officer be blamed who used all the powers at his disposal to have his whole battalion inoculated? He said of the Secretary of State (Lord Kitchener) and of himself, how could they have constant supervision over each commanding officer and each battalion in an army of the size which now existed? Clearly they could not have it, and, that being so, he could only say that where undue pressure was used, pressure which meant absolute compulsion, they regretted it. They did not excuse it, but they understood it, because they understood that a man who was in command of a great fighting force like a battalion of British infantry wished to keep that battalion in every sense ready to undertake all the hardships, perils, discomforts, and dangers of war. Nothing would damage it so much as the terrible devastations of disease, and one could not say that a man was doing what was wholly undesirable when he took measures, which perhaps individuals might not think proper, to see that the whole of his men were inoculated against this terrible enemy which might be so devastating to the men under his command.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, LIMITED, London.
Views on Some Social Subjects. By Sir Dyce Duckworth, Bart. Price 7*s.* 6*d.* net.

ARNOLD, EDWARD, London.
A Surgeon in Belgium. By H. S. Souttar, F.R.C.S., Assistant Surgeon, West London Hospital. Popular edition, illustrated. Price 2*s.* net.

BAILLIERE, TINDALL, AND COX, London.
Martin's Questions and Answers upon Ambulance Work. Revised and brought up to date by Leonard S. Barnes, Official Lecturer, &c., St. John Ambulance Association. Eighteenth edition. Price 1*s.* net.

BLAKISTON'S (P.) SONS AND CO., Philadelphia.
Ductless Glandular Diseases. By Wilhelm Falta (Vienna). Translated and Edited by Milton K. Myers, M.D., with Foreword by Archibald E. Garrod, M.D. Oxon., F.R.C.P. Lond., F.R.S. Price $7 net.

CAMBRIDGE UNIVERSITY PRESS, London.
Relative Strength of Nurture and Nature. By Ethel M. Elderton (Galton Research Fellow). Some Recent Misinterpretations of the Problem of Nuture and Nature. By Karl Pearson, F.R.S. Price 2*s.* net.

DUCKWORTH AND CO., London.
The Foundations of Normal and Abnormal Psychology. By Boris Sidis, A.M., Ph.D., M.D. Price 7*s.* 6*d.* net.

FALCONER, JOHN, Dublin.
Transactions of the Royal Academy of Medicine in Ireland. Vol. XXXIII. Edited by J. A. Scott, M.A., M.D., F.R.C.S.I.

FIFIELD, A. AND C., London.
Selected Passages from the Works of Bernard Shaw. Chosen by Charlotte F. Shaw. New popular edition. 2*s.* 6*d.* net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.
A Guide to Gynæcology in General Practice. By Comyns Berkeley, M.A., M.D., M.C. Cantab., F.R.C.P. Lond., Obstetric and Gynæcological Surgeon to the Middlesex Hospital; and Victor Bonney, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng., M.R.C.P. Lond., Assistant Obstetric and Gynæcological Surgeon to the Middlesex Hospital. Price 25*s.* net.
Manual of Embryology. By A. Melville Paterson, M.D., F.R.C.S., Professor of Anatomy in the University of Liverpool. Price 10*s.* 6*d.* net.

LAURIE, T. WERNER, LIMITED, London.
Of Walks and Walking Tours: An Attempt to Find a Philosophy and a Creed. By Arnold Haultain.

LIPPINCOTT, J. B., COMPANY, London and Philadelphia.
International Clinics. Edited by H. W. Cattell, A.M., M.D., Philadelphia, with the collaboration of C. H. Mayo, M.D., Sir Wm. Osler, Bart., M.D., F.R.S., and Others. Vols. I. and II. Price 35*s.* net per four quarterly volumes.
The Psychoneuroses and their Treatment by Psychotherapy. By Professor J. Dejerine (Paris) and Dr. E. Gauckler (Paris). Authorised translation by Smith Ely Jelliffe, M.D., Ph.D. (New York). Second English edition. Price 18*s.* net.

SMITH, ELDER, AND CO.
War Pictures Behind the Lines. By Ian Malcolm, M.P. Price 6*s.* net.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

FENTON, JAMES, M.D. Birm., Ch.B., D.P.H., has been appointed Medical Officer of Health and Medical Officer to the Educational Committee for Shrewsbury.

KENNEDY, T., M.B., Ch.B. R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Ballyfeard District of the county of Cork.

KIRK, EDWARD, M.B., Ch.B. Edin., has been appointed Resident Surgeon at the Edinburgh Royal Infirmary.

MAX, DAVID, M.B., Ch.B. Edin., has been appointed Resident Surgeon at the Edinburgh Royal Infirmary.

MULES, BERTHA MARY, M.D., B.S. Durh., has been appointed Acting Medical Officer for the Kenton District by the St. Thomas (Exeter) Board of Guardians.

MURNAGHAN, D. F., M.B., Ch.B. N.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Letterkenny District of the county of Donegal.

PATTERSON, W. T., Ch.B. Edin., has been appointed Resident Physician at the Edinburgh Royal Infirmary.

POTTER, J. W., M.B., Ch.B., has been appointed Resident Surgeon at the Edinburgh Royal Infirmary.

RANKINE, MARY D., M.B., Ch.B. Edin., has been appointed Non-Resident House Surgeon at the Edinburgh Royal Infirmary.

SCOTT, W. MACARGUR, L.A.H. Irel., L.M., has been appointed Certifying Medical Officer to the Lancashire Asylums Board, under the Mental Deficiency Act, 1913.

WATTHEWS, J. W., M.B., Ch.B., has been appointed Resident Surgeon at the Edinburgh Royal Infirmary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BETHNAL GREEN INFIRMARY, Waterloo House, Waterloo-road, N.E.—Assistant Medical Officer. Salary at rate of £280 per annum, with apartments, board, and washing.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon for six months. Salary £140 per annum and extras, with board, lodging, and washing.

BRIGHTON COUNTY BOROUGH ISOLATION HOSPITAL.—Resident Medical Officer. Salary £250 per annum, with board and lodging.

BRIGHTON, ROYAL SUSSEX COUNTY HOSPITAL.—Junior House Surgeon and Assistant House Surgeon, unmarried. Salary £80 per annum each, with War Bonus at rate of £60 per annum, with board, residence, and laundry.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry. Also Dental House Surgeon for six months. Salary at rate of £120 per annum, with apartments, board, and laundry.

CAMBRIDGESHIRE ASYLUM, Fulbourn, near Cambridge.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, washing, and attendance.

DORCHESTER COUNTY ASYLUM.—Second Assistant Medical Officer. Salary £300 per annum and all found.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Resident House Surgeon.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £150 per annum, with board, apartments, and washing.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £200 per annum, with board, lodging, and washing.

HAMMERSMITH INFIRMARY AND WORKHOUSE, Ducane-road, Wormwood Scrubs, W.—Second Assistant Medical Officer. Salary £170 per annum, with board, lodging, washing, and attendance.

IPSWICH MENTAL HOSPITAL.—Locum Tenens. Salary 6 guineas a week.

LABORATORIES OF PATHOLOGY AND PUBLIC HEALTH, 38, New Cavendish-street, W.—Bacteriologist.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

LINCOLN, LINDSEY (LINCOLNSHIRE) COUNTY COUNCIL.—Temporary Assistant Tuberculosis Officer. Salary at rate of £350 per annum.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C.—Resident Medical and Surgical Officer. Salary at rate of £80 per annum, with board and apartments.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Medical Registrar. Salary at rate of 40 guineas per annum.

MANCHESTER, CITY OF.—Female Medical Officer. Salary £350 per annum.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Female Resident Surgeon. Salary £120 per annum, with board, apartments, and laundry.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician and House Surgeon for six months. Salary at rate of £80 per annum each, with board, residence, and washing.

PORTSMOUTH ROYAL HOSPITAL.—House Surgeon for six months. Salary £150 per annum, with board, &c.

PUTNEY HOSPITAL, Putney Common, S.W.—Resident Medical Officer. Salary £150 per annum, with residence, board, and laundry.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon for six months. Salary £100 per annum, with board, residence, and washing.

REETH UNION AND RURAL DISTRICT COUNCIL, Yorkshire.—Medical Officer (Muker District) and Medical Officer of Health (whole District). Salary £45 and £50 respectively.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Resident Medical Officer. Salary as arranged.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Male and Female House Physician and House Surgeons for six months. Board, lodging, and washing provided.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon. Salary £100 per annum, with board and residence.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon. Salary £120 per annum, with rooms, board, and washing.

TRURO AUXILIARY NAVAL HOSPITAL.—Resident Assistant Medical Officer, unmarried. Salary £150 per annum, with quarters, board, and laundry.

WARWICKSHIRE AND COVENTRY JOINT COMMITTEE FOR TUBERCULOSIS.—Tuberculosis Medical Officer. Salary £500 per annum.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House Surgeon, unmarried. Salary £120 per annum, with residence, board, and laundry.

WEST HAM AND EASTERN GENERAL HOSPITAL.—Resident Medical Officer. Salary £160 per annum. Also House Physicians and House Surgeons. Salary £120 and £100 per annum respectively, with board, residence, and washing.

WEST RIDING ASYLUM, Menston, near Leeds.—Temporary Assistant Medical Officer.

WHITCHURCH, NEAR CARDIFF, WELSH METROPOLITAN WAR HOSPITAL.—Resident Physician.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary £150 per annum, with board, apartments, and washing.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary at rate of £150 per annum, with board, rooms, and laundry.

WORCESTER COUNTY AND CITY ASYLUM, Powick.—Second Assistant Medical Officer. Salary £275 per annum and all found.

WORCESTER GENERAL INFIRMARY.—Resident Medical Officer. Salary £150 per annum, with board, residence, and laundry.

WREXHAM INFIRMARY.—Resident House Surgeon. Salary £130 per annum, with board and laundry.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Clonaslee, in Queen's County, Ireland.

Births, Marriages, and Deaths.

BIRTHS.

BRAY.—On Sept. 27th, at the Royal Hospital, Chelsea, the wife of Lieutenant-Colonel George Bray, R.A.M.C., of a daughter.

CATES.—On Sept. 28th, at Laurel Mount, St. Helens, the wife of Joseph Cates, M.D. Lond., D.P.H. Camb., of a daughter.

CHAPMAN.—On Oct. 2nd, at Bedford-place, W.C., the wife of R. J. Chapman, M.D. Edin., of a daughter, who only survived birth a few hours.

HEBBERT.—On Oct. 3rd, at Broadhurst-gardens, West Hampstead, the wife of Captain R. F. Hebbert, I.M.S., of a daughter.

PATTON.—On Sept. 3rd, at Cross Park, Brixham, S. Devon, the wife of Dr. Clare R. Patton, W.A.M.S., of a daughter.

REVIE.—On Oct. 3rd, at Ashleigh House, Ashington, Northumberland, the wife of Dugald Revie, M.B., C.M., D.P.H., of a son.

MARRIAGES.

FERGUSSON—ROSE.—On Oct. 2nd, William Manson Fergusson, M.D., Ch.B., L.M., of Old Castle Gate, Banff, to Nan, daughter of Mr. and Mrs. Arthur Rose, of Glazbury-road, Kensington, W.

MANSON—MILNE.—On Sept. 29th, at St. Luke's, Holloway, Kenred Manson, M.B., B.S., W.A.M.S., to Alexander Ina, second daughter of the late John Scott Milne, of Aberdeen.

SINCLAIR—BISHOP.—On Oct. 4th, at St. John's Church, Winchester, George H. Sinclair, F.R.C.S. Edin., to Maud Bridget Bishop.

DEATHS.

BULLOCK.—Killed in action on Sept. 27th, in Flanders, Arthur Ernest Bullock, Captain, R.A.M.C., Medical Officer, Middlesex Regiment, aged 26 years.

CARLESS.—On Sept. 26th, from wounds received in action, Albert William Buchan Carless, Lieutenant, 1st Middlesex Regiment, and Undergraduate of the Medical Faculty, King's College, London, the elder son of Albert Carless, M.S., F.R.C.S., of 6, Upper Wimpole-street, W., aged 21 years.

CARRINGTON.—On Sept. 25th-26th, killed in France, Edward Worrell Carrington, Temporary Captain, R.A.M.C., attached 2nd Worcester Regiment, aged 26 years.

CUFFE.—On Oct. 4th, suddenly, after a short illness, at Cadogan Court-gardens, Cadogan-place, S.W., Surgeon-General Sir Charles McDonough Cuffe, K.C.B., J.P., F.R.C.S., L.R.C.P., LL.D., late Army Medical Staff and 11th Hussars, aged 73 years.

JACKSON.—On August 14th, at the residence of his daughter, Mrs. Ernest Bruce, Quamby, Toorak, Melbourne, Australia, James Jackson, M.D. Lond., M.R.C.S., aged 76 years.

NANNEY.—On Oct. 3rd, at Folkestone, Lieutenant-Colonel Lewis Charles Nanney, late I.M.S. (Madras)

TAYLOR.—On Oct. 3rd, at Walkinshaw Lodge, Johnstone, Renfrewshire, Matthew Hamilton Taylor, M.D., in his 71st year.

TREVITHICK.—On August 5th, at St. Martin-Vesuble, France, Edgar George Trevithick, M.A., M.D. Cantab., M.R.C.S.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

VITAL STATISTICS OF CEYLON.

A REPORT on the Ceylon Blue-book for 1914, prepared by Mr. M. A. Young (Assistant Colonial Secretary), has been received at the Colonial Office for presentation to Parliament. It states, *inter alia*, that the estimated population on Dec. 31st, 1914, was about 4,260,700—a decrease of nearly 1400 on that of the previous year. The decrease was due to an excess of about 26,700 departures over arrivals of Indian coolies, a number which exceeded the natural increase of births over deaths. The population is, roughly, composed as follows:—

Nationality.	Number.	Percentage of total population.
Sinhalese	2,798,800	..... 65·7
Tamils (indigenous) ...	613,500	..... 14·4
Tamils (immigrants and their descendants) ...	512,800	..... 12·0
Moors	269,800	..... 6·3
Burghers	27,700	..... 0·7
Malays	13,400	..... 0·3
Europeans	7,800	..... 0·2
Others	16,900	..... 0·4

There is an excess of males over females in the population—viz., 113 males to 100 females, as contrasted with England and Wales, where the proportion is 94 males to 100 females.

The birth-rate in Ceylon for 1914 was 38·1 per 1000, and was slightly above the average (37·5) for the previous decade, but below the rate in the preceding year (38·6). The proportion of births to population in Ceylon is similar to that prevailing in other tropical countries, but considerably higher than the rate in England and Wales. It has shown no marked tendency in the last 16 years either to rise or to fall. There were 104 male to every 100 female births—the same as the English rate. The death-rate for the whole island was 32·2, and was higher than the average (30·2) for the previous decade and the rate (28·4) in the preceding year. Since 1898, when improved registration began, the death-rate, with slight fluctuations, has had a tendency to rise. The average death-rate of Ceylon is generally much lower than that prevailing in the Straits Settlements; it is almost identical with the rates which obtain in Bombay Presidency, Bengal, and British Guiana; but the mortality exceeds that of Madras and Jamaica, whilst it is more than double the average annual mortality in England and Wales, and almost three times the rate in the Australian Commonwealth and New Zealand.

The tea, rubber, and cocoa estates at the end of the year 1914 contained a population of about 579,300, mostly of Tamil immigrants from Southern India. The estate death-rate rose to 42·85 per 1000 from an average of 33·2, and was as high as 79·2 and 74·5 in Ratnapura and Kurunegala estates respectively. The urban death-rate was 30·5 per 1000, as against an average of 29·3 for the preceding five years. The rate rose from 8·9 in Nuwara Eliya town to 64·8 in Anuradhapura and 64·4 in Mullaittivu. But the mortality of Nuwara Eliya is calculated, not on the average population of the town, which is not known, but on the population estimated on a census taken at the height of the Nuwara Eliya season, and this recorded rate is obviously flattering to the sanatorium of Ceylon. Excluding Nuwara Eliya, the healthiest town, as in the previous year, was Kegalla, with a death-rate of 16·1. The infantile mortality was 213 per 1000 registered births compared with an average of 191 and an average rate in England and Wales of 121 to 1000 births registered. In the last 16 years the infantile mortality has shown a tendency to rise. The estate infantile mortality was 246 per 1000 as in the previous year, and the urban rate was 255, as against 246 in the previous year.

The proportion of deaths in the general community from certain principal causes to a million of the population was as follows: Diarrhœa, 3511; infantile convulsions, 3438; bronchitis and pneumonia, 1262; dysentery, 1112; phthisis, 994; other forms of tuberculosis, 101; malaria and malarial cachexia, 645; ankylostomiasis, 620; premature birth and congenital defects, 365; cancer, 99; enteric fever, 70; small-pox, 24; and cholera, 11. The total number of deaths from plague registered in the island during the year was 401, of which 378 were within the municipal limits of Colombo and 23 elsewhere. This number corresponded to a rate of 94 per million persons living in the island. Accidental drowning accounted for 101 deaths per million, falls from trees for 86, and snake-bite for 56. 209 deaths (including two of Europeans) resulted from suicide, and corresponded to a rate of 49 per million persons living. Homicide also accounted for 209 deaths, corresponding to a rate of 49 per million—more than five times the rate prevailing in England and Wales.

There are 80 Government hospitals equipped with modern hospital furniture and surgical appliances, the number of beds in the institutions ranging from 12 to 647. In addition to the hospitals there are 427 Government dispensaries and 366 estate dispensaries. The latter are provided by the owners of the estates, but receive drugs free from Government up to a value of 50 cents per labourer per annum. Three hospitals were completed and opened during the year, and five others are in course of construction at various centres. A general rebuilding scheme is in contemplation for the improvement of the Medical College. The full course of training for medical students is five years; a diploma in medicine, surgery, and midwifery (which can be registered in the United Kingdom) is granted to successful students. In Colombo there are a bacteriological institute, a general hospital, lunatic asylum, an ophthalmic hospital, a lying-in home, a hospital for women and children, and one for infectious diseases. There is also an establishment where calf vaccine is manufactured, and there are special dispensaries at Kandy and Galle for the treatment of eye diseases. The lunatic asylum contains 826 inmates. As there is very considerable overcrowding in the present building, it is proposed to erect a new institution a few miles out of Colombo, with accommodation for 1000 patients and for the necessary staff, officers, and servants. The number of patients treated in the asylum during 1914 was 1068 (685 males and 383 females). The number discharged was 166 and the number of deaths 76.

The Leper Asylum is situated six miles from Colombo; it contained 426 patients at the end of the year. The total treated during 1914 was 557. A small establishment for lepers exists at Kalmunai, in the Eastern Province, with accommodation for 30. It is proposed to establish a leper colony at Mantivu in the same province. A home for incurables (containing 80 beds) is administered by a committee of Government officials and representatives of the public.

The rainfall in 1914 was above normal in the north and east and slightly below it elsewhere. The highest average temperature for the year was Trincomalee 83·8° F., and the lowest Nuwara Eliya 60·4°. At Colombo and Kandy the averages were 81·1° and 76·7° respectively. The highest shade temperature recorded during the year was 101·2° at Anuradhapura on Sept. 17th; the highest on record is 103·7° at Trincomalee on May 12th, 1890.

CARBINE AND CARABIN.

To the Editor of THE LANCET.

SIR,—As your correspondent "K. M. E." in THE LANCET of Oct. 2nd states, the origin of the word "carabin" seems to be unknown to etymologists, but very early it was used in France as the name of a body of light cavalry armed with a small arquebuse which later took the name of the men who used it. Young surgeons, and later medical students, were nicknamed "Carabins à genoux," the suggestion being fairly obvious, and now simply "carabins."

I am, Sir, yours faithfully,
J. Y. W. MACALISTER.

Royal Society of Medicine, 1, Wimpole-street, W.,
Oct. 4th, 1915.

PS.—A Spanish etymologist suggests that the word is derived from Sp. *Chadapulda*—a machine for throwing missiles—and is cognate with "Catapult."

THE TELEPHONE AND FOREIGN LANGUAGES.

THE *London Gazette* of Oct. 5th announces that in pursuance of the Telephone Regulations, 1915, His Majesty's Postmaster-General gives notice that until further notice no telephone shall be used for the transmission of any message or communication except in the English language unless specific permission to employ some other language has been obtained.

A PERIL OF THE HEDGE AND FIELD.

To the Editor of THE LANCET.

SIR,—In your note last week you do scant justice to the hedge and the field. The hip, the sloe, the service-berry, the elderberry, once thought to be poisonous, and the rowan-berry, otherwise the mountain ash berry, which, I think, used to be recommended by the famous old English gardener, Loudon, as good for pies in the same way as we now use cranberries with apples or as a beverage, are some of the useful products. Then some of the most deliciously flavoured strawberries are of the wild variety, and used to be frequently favoured in Belgium and the continent generally. The acorn and the horse-chestnut, especially the American variety of the latter, have been sometimes suspected. But it is a fact that the poisonous plants bearing berries are those chiefly attractive to children. Another such in the hedges is the arum or cuckoo pint, which in autumn shows its cluster of brilliant scarlet berries, a dozen or more on a green stem, as large as a black currant. Loudon, a long time ago, in his voluminous instructions for gardeners, included a list of poisonous plants and fungi in Great Britain which he said every gardener should know for obvious reasons. A good many gardeners in this country will root up and throw on the dunghill any poisonous plant which is particularly noxious, but there are other plants so well known that they are retained, such as the foxglove, the lily of the valley, the monkshood or aconite, the lupin, the larkspur, the poppy, the narcissus, the Christmas rose or black hellebore, and the mezereon. In some continental almanacs a page or two of clear illustrations is given of poisonous plants, so that the people may get a knowledge of what to avoid. One such list I have seen contained 35 small but clear pictures. But in this country the ordinary gardening books seem to avoid much reference to them, or at any rate to their poisonous qualities, apparently with the idea that such information is not desired or unnecessary or dangerous.

I am, Sir, yours faithfully,
Oct. 4th, 1915. GARDENER.

"UNSTABLE TO LIGHT."

IN an abstract appearing in the *Journal of the Chemical Society* for September of a paper on a New Contribution to the Knowledge of Bivalent Nitrogen the following sentences occur: "Solutions of the tetradimethylaminotetraphenylhydrazine, on account of the bivalent nitrogen radicle present, are unstable to light and gradually become red, the colour being due to the formation of trimethylindamine (dimethylaminophenylmethylquinonedi-imide), the mechanism of the change being uncertain; the hydrazine compound also undergoes concurrent decomposition in the manner observed previously with analogous substances, giving tetradimethylaminodiphenylamine and tetramethyldiaminotetramethyldiaminodiphenyldihydrophenazine, a yellow powder, the colourless solution of which in acids is turned blue by the action of oxidising agents such as ferric chloride or bromine." No surprise need be felt that this compound is unstable to light. Indeed, it must be hard for the elements to hang on in such a packed molecule. In a lecture on the subject it may be assumed that the lecturer would find it more convenient to refer to the "yellow powder" rather than to the 60-lettered word, particularly if the references to it are frequent.

CARTRIDGE SHOT IN THE APPENDIX.

To the Editor of THE LANCET.

SIR,—I was much interested in reading Dr. C. C. Boyle's case in THE LANCET of Oct. 2nd under the above heading on the lead pellets found in the appendix and the fact that the patient had been accustomed to eating frequently rabbits which had been shot. In Dr. Boyle's case this fact, no doubt, accounted for the presence of the shot, but it may be as well to remember that there are still extant some ignorant or superstitious people who will swallow shot as a medicine. For example, I remember reading in THE LANCET a note on "The Rising of the Lights," in which an anonymous correspondent related that "One 'lady' said, 'Aw've got risin' o' th' leets, and aw've been swallowing 'shot corns' to keep 'em deawn,' and she *had*, and had been dosing herself with leaden pellets to that purpose. This is an actual fact."

I am, Sir, yours faithfully,
Oct. 1st, 1915. LAPIN.

*** Similar cases were referred to in THE LANCET of Jan. 30th, 1897, p. 359.—ED. L.

AN EXPENSIVE CATTLE MEDICINE.

AT the last meeting of the Devon county council it was stated that a sample of a much-advertised cattle medicine was on analysis found to consist of a coloured dilute solution of ammonia, the value of the contents of a bottle, sold for 2*s*., being one-twentieth of a penny. Several members wished to have more information about this concoction, but it appeared that the committee had been advised not to give names. The report of the analysis is in the county council offices, and any member of the council can peruse it.

THE CHURCH LADS' BRIGADE IN TIME OF WAR.

WE have received a booklet entitled "The Church Lads' Brigade in Time of War," setting out the excellent work which the Brigade has done and is doing in the defence of the Empire. A plate portrays the 16th Service Battalion of the King's Royal Rifles, raised under the auspices of Field-Marshal Lord Grenfell entirely from present and past members of the Brigade, of whom 120,000 have joined the colours. Another illustration is of some 700 officers and men from various regiments, including Australia and New Zealand, and forming part of Sir Ian Hamilton's army of invasion in Turkey. The Brigade has already paid its toll of death and suffering in the field, and distinctions of every sort—the V.C., D.S.O., and D.C.M.—have been won. Portraits are given of Church Lads' Brigade heroes and a description of the deeds which

have won them their honours. More than half of the Territorial Cadet Force is comprised of Church Lads' Brigade lads who are being trained to help to fill up in due course the depletions in the ranks. The Brigade continues its usefulness as a recruiting agency, sending out young men of character, well disciplined, and with a military training far beyond the limits of elementary drill. The authorities ask for the continuance of the public support required for the further extension of this valuable work and for assisting to provide uniforms for the cadets. Contributions will be thankfully acknowledged by Mr. W. M. Gee (Cadet Colonel Commandant), Secretary and Chief Staff Officer, Aldwych House, Catherine-street, London, W.C.

CURIOSITIES AND DEFECTS OF SIGHT.

To the Editor of THE LANCET.

SIR,—You published in THE LANCET of Sept. 25th some notes on Professor Stirling's interesting pamphlet on this subject, and I notice in the following issue an advertisement of a well-known food, the border of which has been designed in the ingenious way to which Professor Stirling calls attention.

I am, Sir, yours faithfully,

Oct. 1st, 1915. INTERESTED.

*** The use of ocular curiosities in advertisements is fairly common; undoubtedly such advertisements do receive public attention.—ED. L.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8 P.M., Annual Meeting. 8.30 P.M., Dr. W. Pasteur (In-coming President): Introductory Address.—Mr. J. T. J. Morrison (Birmingham): Experiences in Serbia in 1914-15.

HUNTERIAN SOCIETY, Royal Society of Medicine, 1, Wimpole-street, W.

WEDNESDAY.—8.30 P.M., Council Meeting. 9 P.M., Lecture:—Dr. S. West; Bright's Disease in Some of its Clinical Aspects.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—8.30 P.M., Presidential Address:—Dr. F. M. Sandwith: Pellagra considered from the Point of View of a Disease of Insufficient Nutrition.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—4 P.M., Dr. J. L. Bunch: Salvarsan and Syphilis.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Baldness and its Treatment.

CHADWICK PUBLIC LECTURES, Hampstead Central Library, Finchley-road, N.

MONDAY.—8.15 P.M., Prof. D. N. Paton (Glasgow): Food in War Time—Good Food and Bad Food (illustrated by lantern slides). (Lecture II.)

For further particulars of the above Lectures, &c., see Advertisement Pages.

The following magazines, journals, &c., have been received:—Caledonian Medical Journal, St. Bartholomew's Hospital Journal, Prescriber, British Dental Journal, British Review, Interstate Medical Journal, Revue d'Hygiène, Therapeutic Gazette, Practitioner, Calcutta Medical Journal, Journal of State Medicine, Journal of the Royal Sanitary Institute.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

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METEOROLOGICAL READINGS.

(Taken daily at 9.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 6th, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Sept. 30	29·680	N.	...	91	53	41	43	46	Cloudy
Oct. 1	29·960	NNW	0·02	95	54	39	40	42	Cloudy
,, 2	30·010	E.	0·05	61	53	42	44	46	Raining
,, 3	30·250	W.	...	90	61	49	50	52	Cloudy
,, 4	30·374	N.E.	...	94	59	46	48	50	Overcast
,, 5	30·234	N.E.	0·02	89	56	46	46	49	Cloudy
,, 6	30·214	N.E.	...	93	60	49	52	53	Cloudy

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